University of Alberta

Economic Feasibility of Recreational Enterprises with First Nations Cultural Attributes

by

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Dedication

To my parents, László and Rozália Ütő.

Abstract

This research examines the demand for cultural elements of recreational camping in northeastern Alberta, to assess the compatibility of tourism with the economic sustainability of a First Nation community interested in resort development. Campers were surveyed and asked to complete a stated choice experiment designed to analyze preferences and demand for various camping attributes, including culture. Results indicate that campers are largely indifferent towards cultural attractions, but exhibit strong demand for basic attributes of camping. This analysis was combined with current visitation data to create a simulation model of visits for the region, which was used to forecast revenues for the proposed resort. Owing to its favourable qualities and location, the resort can expect to attract a sizable share of the region's camping market. The biggest challenges facing the First Nation are to attract development financing and to examine the resort's profitability and compatibility with the community's cultural goals.

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Chapter 1: Introduction

1.1 Introduction

Canada's Aboriginal communities are pursuing economic development activities at an unprecedented rate, with the goal of securing self-determined and self-reliant livelihoods, in ways that preserve and strengthen their culture (Anderson 1997; Anderson 2000; Hinch and Butler 1996). While economic activities are mostly based on primary industries, such as forestry, tourism is increasingly being sought as a development strategy by communities wishing to participate in the global economy, and it has been highly promoted by the Canadian tourism industry for its potential to generate revenue, while providing economic enterprises consistent with Aboriginal culture (Canadian Tourism Commission 2000). According to the Canadian Tourism Human Resource Council (2000), Aboriginal tourism generated approximately $250 million a year in 1999 and has the potential to reach $1 billion within 10 years. In 1998, Canada implemented a national Aboriginal tourism strategy in the form of Aboriginal Tourism Team Canada to capitalize on this market potential (Sawchuk and Christie 1998).

One of two motivations for this research comes from the above trends, to the extent that, while Aboriginal tourism is highly promoted, there has been very little attention paid by governments and the tourism industry to the economic feasibility of this type of tourism in specific contexts. In addition, there has been inadequate accountability for the domestic tourist market, which accounted for 70 per cent of Canada's tourism revenue in 2003 (Canadian Tourism Commission 2003a). Furthermore, existing studies of market potential are quite general, since they use national macroeconomic data and indicators as their basis, which limits their applicability to market feasibility assessment in local contexts. The second motivation comes from the First Nation[1] community of Heart Lake, a research partner, located in the boreal forest of Alberta, Canada, approximately halfway between Edmonton and Fort McMurray. The community's leadership is interested in

[1] First Nations are one of three groups of Aboriginal People recognized by the Canadian constitution who have specific rights to land and resources flowing from treaties signed with the government, as a result of North American occupancy dating to precolonial times (Anderson 1997).

pursuing campground resort development for economic gain. Their development plans include a campground, cabins, boating facilities, beach, recreational and nature programs, such as guided canoe trips and wildlife viewing facilities, and various amenities with an Aboriginal theme, including tipis, cultural activities, and cultural interpretation. It is the Aboriginal products that the community hopes to capitalize on as a unique market opportunity.

There are only a handful of published economic feasibility studies that involve Aboriginal communities and none, that could be found, that assess the demand for Aboriginal cultural products as part of a community development strategy. There is also limited previous academic research linking the supply and demand aspects of Aboriginal cultural products, in general, and existing studies originate almost exclusively out of Australia and New Zealand, two countries that have also tried to capitalize on their high Aboriginal tourism potential (McIntosh 2004; Ryan 2002; Ryan and Huyton 2002; Ryan and Huyton 2000a; Ryan and Huyton 2000b). These studies are distinguished by survey-based, qualitative assessments of tourist preferences, their primary contribution being the inclusion of the domestic market in characterizing tourist demand. Their results suggest that attractions based on Aboriginal culture may not be as popular as generally thought, a finding that is at odds with many tourism industry studies. This contradiction, and the lack of research about demand for Aboriginal cultural products in general, has led many researchers to conclude that existing studies offer little understanding of the level of interest in the market for cultural products, and that there is a need for market research to help clarify visitor demands in the search for commercial market opportunities (Hughes 1996; McIntosh 2004; Sinclair 1998). Ryan and Huyton (2002) point to a gap between the promotional efforts directed at indigenous tourism and the reality of tourist interest, and Ryan (2002) states that much of the literature on indigenous peoples and tourism has not identified the links between cultural products and domestic demand, in particular.

1.2 Research Objectives

This research contributes to the literature on cultural tourism and recreation demand by demonstrating the application of quantitative approaches to assess the demand for Aboriginal cultural services in a particular region. The motivations of tourists for a particular activity through which Aboriginal products can be consumed are also examined. In so doing, this study provides insights into the nature of domestic demand for Aboriginal cultural services, which is often overlooked. The Attribute Based Stated Choice Method (ABSCM) is used to analyze the demand for various aspects of recreational camping, including a cultural component, which, to this researcher's knowledge, has not yet been done in this framework. This analysis provides insights into the tradeoffs that people are willing to make regarding attributes of recreation sites, including cultural tourism opportunities. A Best-Worst model is used to analyze tourists' motivations, including an intellectual motive, to provide insights into the benefits that tourists are seeking from recreational camping experiences and to validate the results of the demand analysis. The research also contributes to the development plans of the Heart Lake First Nation by providing the community with information about the implications of alternative development strategies, including whether it should construct a recreation resort, and whether that resort should contain cultural themes.

The purpose of this research is to assess the demand for cultural components of recreational camping in northeastern Alberta and to investigate the compatibility of tourism, as a development strategy, with the economic sustainability of the Heart Lake First Nation. The research objectives can be summarized as follows:

1. Use survey methods and economic models to estimate the demand and motivations for Aboriginal cultural services at northeastern Alberta camping facilities.
2. Combine the resulting demand analysis with data on current visitation in the region to create a calibrated simulation model of visits.
3. Forecast visitation to the First Nation's proposed resort, to assess its market feasibility under a variety of future supply and demand scenarios.

4. Evaluate the overall feasibility of this venture in the context of the Heart Lake community's economic and cultural goals.

1.3 Thesis Structure

The thesis is organized into five chapters and proceeds with the Background, Methods, Results, and Discussion and Conclusion. Chapter 2 provides an overview of Aboriginal economic development in various contexts, beginning with a description of the socio-economic status of Aboriginal People in Canada, a summary of development theory and its contribution to particular indigenous development perspectives and outcomes, and a discussion of the rationale commonly used to criticize or support cultural tourism as a development strategy for indigenous people. A review of existing research that has assessed the demand for cultural tourism, a brief description of the community that is the focus of this economic feasibility study, and an overview of methods used to measure tourism demand, specifically the demand for outdoor recreation, are also included in chapter 2. Chapter 3 continues by describing the methods that were used in this study to measure recreation demand, including those of survey design, data collection, econometric modeling and estimation, and policy assessment. It provides an overview of discrete choice and Random Utility Theory (RUT), the theoretical underpinnings of the models in the thesis. Chapter 4 documents the characteristics of the sample, including household- and individual-level descriptive statistics, and the results of the empirical and forecasting models, including simulations describing the economic feasibility of the Heart Lake community's proposed resort. Chapter 5 discusses the results of the study and their implications for the Heart Lake community, in terms of the economic feasibility of the proposed resort and the compatibility of tourism, as a development strategy, with the economic sustainability of the community. The chapter also outlines some of the limitations of the study, as well as its contributions, concluding with recommendations about future research in this area.

Chapter 2: Background

2.1 Introduction

In terms of their historically disadvantaged status and marginalization from the benefits of mainstream social and economic development, Canada's Aboriginal People share the realities, concerns, and interests of many indigenous communities around the world (Rangan and Lane 2001; Shmatkov and Brigham 2003). Like other indigenous groups, they are increasingly voicing their concerns and demands through notions legitimized by nations and international laws – of indigenous rights and social justice – combined with assertions of practical and spiritual attachment to places of traditional use and occupation (Rangan and Lane 2001). Their collective voice has resulted in formal recognition of the Aboriginal right to meaningful participation in policies and processes affecting Aboriginal material and social well-being, including the right to sustainable livelihoods through economic independence.

This chapter begins with a description of the socio-economic status of Aboriginal People in Canada, followed by a summary of development theory and its contribution to particular indigenous development perspectives and outcomes. This is followed by a discussion of the rationales commonly used to criticize or support cultural tourism as a development strategy for indigenous people and a brief review of research that has examined the demand for Aboriginal cultural tourism. A description of the community that is the focus of this economic feasibility study follows. The chapter concludes with an overview of methods used to measure tourism demand, specifically the demand for outdoor recreation.

2.2 Motivation

The statistics commonly used to describe Canada's Aboriginal population emphasize the pressing need for new economic opportunities in the coming years. The average annual income of Aboriginal People is 30 to 50 per cent below the non-Aboriginal average, and

the Aboriginal unemployment rate, at about 20 per cent, is roughly two times the non-Aboriginal figure (Loizides and Greenall 2001; Sawchuk and Christie 1998). This problem is particularly acute on reserves, which are often geographically isolated. There is a significant gap between the educational attainment of Aboriginal and non-Aboriginal populations, a situation exacerbated by the poor economic and social conditions on reserves, including limited family support and lack of access to learning technologies (Loizides and Greenall 2001).

Aboriginal People represent roughly 3 per cent of Canada's population; however they are increasing in number, in both absolute and relative terms: between 1991 and 2016, the Aboriginal population is expected to increase by 52 per cent, compared to 22 per cent for the rest of Canada (Sawchuk and Christie 1998), with almost half of this increase occurring on reserves (Loizides and Greenall 2001). The Aboriginal population has a relatively youthful structure: it is estimated that, by 2008, people under 19 will make up 39 per cent of the total registered population (Loizides and Greenall 2001). The combined effects of population growth and high unemployment will require the creation of approximately 500,000 jobs for Aboriginal People by 2016 (Sawchuk and Christie 1998).

In most Aboriginal communities today, economic activity is largely focused on the diverse natural resource base, including forestry, oil, minerals, and other resource extractive industries (Grekin and Milne 1996). For some communities, this type of economic strategy is working, but for many, it is not. In many cases, resources are developed by external interests, a situation that often fails to adequately meet local employment needs and results in continued reliance on government welfare programs (Grekin and Milne 1996).

Over the past four decades, the Canadian government adopted various approaches to promote Aboriginal economic development, including urbanization programs, on-reserve business development, sectoral development, and human development (Saku 2002). These approaches were mostly ineffective (Saku 2002) and reflected the dominant paradigms of development at the time, which were often used to describe and analyze the

processes and outcomes of economic growth among Aboriginal People in North America (Anderson 1997). While these paradigms may be useful in explaining the causes of the present circumstances of Aboriginal People, they are of less use in understanding the approaches to economic development now emerging among indigenous groups in Canada and around the world (Anderson 1997). The following section describes these theories of development and how they have evolved to accommodate indigenous perspectives.

2.3 Development Theory

Development is an elusive concept and has acquired different meanings over time, not least because of the interdisciplinary, theoretical, and ideological perspectives from which it has been studied, and the range of development puzzles and problems to which it has been applied. As a grand theory of social change, development theory can be limiting because of its broad scope, in the sense that many development problems can be understood from more specific perspectives – such as rural development and urbanization, for example – and due to its focus on a few leading theories – namely modernization and dependency – that have come to dominate development discourse (Jaffee 1998; Pieterse 2001). It is not surprising, then, that the leading theories have been the ones most often applied to Aboriginal societies (Anderson 1997; Deutschlander and Miller 2003; Hosmer and O'Neill 2004; Notzke 1999; Saku 2002), despite their limitations in these and other socio-economic and political contexts (Anderson 1997). Accordingly, discussion has gradually shifted to less structuralist, more agency-oriented views and such previously ignored dimensions as local culture and local participation have acquired important status in alternative and mainstream perspectives (Anderson 1997; Markey et al. 2001; Pieterse 2001; Ruttan 1997).

The essence of the modernization/growth paradigm, which originated in the 1950s post-war era, is that societies follow a linear path of development from traditional to modern, or Western (Hosmer and O'Neill 2004; Jaffee 1998), a progression involving the replacement of primary activities such as fishing, agriculture, hunting, and trapping with entrepreneurialism and wage labour as a means of livelihood (Notzke 1999). The theory

describes the set of social and political structural characteristics, such as cultural values and macroeconomic policies, required for economic growth in "traditional" or "stagnant" nations and regions, the adoption of which, inevitably, leads to development and industrial progress (Jaffee 1998). The influence of this perspective is evident in the Canadian government's Aboriginal policy in the 1960s, which deemphasized traditional economic activities in favour of wage employment, promoted migration to urban centers, and assisted Aboriginal people in skills accumulation for participation in the market sector, a policy which had adverse effects on Aboriginal lifestyle and language (Saku 2002).

Dependency theory emerged in the 1960s as a counterpoint to the modernization perspective. It maintains that the power asymmetry between nations stems from the capitalist system adopted by technologically advanced nations (the core), which was characterized by exploitation of underdeveloped nations (the periphery) for their primary products in exchange for manufactured goods (Jaffee 1998). The result was an imbalance in the terms of trade between nations (Jaffee 1998) and the creation of a form of technological dependency among the underdeveloped (Grekin and Milne 1996). According to dependency proponents, history demonstrates that the development of wealth in Europe and the West was enhanced by the exploitation and underdevelopment of colonized nations, supporting the argument that development and underdevelopment are two sides of the same coin (Jaffee 1998; Pieterse 2001), and that capitalism's success depends on the underdevelopment of peripheral countries (Hosmer and O'Neill 2004). This situation, according to some, has led to a form of development in low-income countries that favours Western consumption patterns and, thus, one that is shaped by outsiders (Jaffee 1998).

In the US, dependency theory has been used to support the argument – which can be extended to Canada, due to their similar historical contexts – that Aboriginal incorporation into the economy through a practice of exploitation was the source of extreme poverty found on reserves (Hosmer and O'Neill 2004). Reserve conditions were not a result of rural isolation or clinging to Aboriginal ways, but to the growth of urban

centers of finance, power, and political influence at the expense of rural areas. Urbanization was sustained by the wealth accruing from railroad construction, ranching, mining, forestry, and other primary activities taking place on lands traditionally belonging to Aboriginal People (Hosmer and O'Neill 2004). The Canadian experience supports the argument of dependency, at least to the extent that Aboriginal communities were (and many still are) technically and/or financially reliant on government support (Saku 2002).

Critics of dependency theory argue against the apparent contradictions inherent in a model that demands an end to exploitation, yet does not challenge its primary objective of capitalist development. As Hosmer and O'Neill (2004, p.7) indicate, "the dependency paradigm provided a compelling set of political objectives, including control over land, political sovereignty, and a moral case for retribution, but it prohibited a discussion of alternative models of development." The theory may offer insights into the structural causes of poverty on reserves, but obscures the role of Aboriginal People in devising alternative strategies of development, on culturally specific terms. Similarly, the modernization approach is not criticized outright, but for the dichotomous way in which it depicts "traditional" and "modern," whereby one acquires meaning only in relation to the other (Hosmer and O'Neill 2004; Wuttunee 2004).

Modernization and dependency theory, which together comprise mainstream development thought, emphasize structural macroeconomic change. The 1970s saw the emergence of alternative development, which focused on agency, in terms of people's capacity to bring about change, with an emphasis on local participation and self-reliance (Pieterse 2001). Alternative development theory is widely viewed as a critique of mainstream development, as opposed to an alternative development paradigm in itself, and assumes many names, such as participatory development and community economic development. Alternative development was later complemented by other types of development philosophies, such as human and sustainable development, most of them focused on the aspirations, rather than the attributes, of development (Jaffee 1998; Pieterse 2001). Many of these aspirations have gradually made their way into mainstream

development which, once concerned solely with growth and GNP, is now showing considerable overlap with alternative ideals in its people-centered focus (Pieterse 2001).

In essence, there has been a movement away from grand theories and broad-spectrum policies, toward more specific explanatory frameworks and development prescriptions, and the recognition that there are multiple strategies to development, depending on the characteristics and capacities of societies (Pieterse 2001; Vázquez-Barquero 2002). This change was evident in many social science disciplines, including economics, which introduced endogenous growth theory and new institutional economics (NIE) to challenge the dominant paradigms associated with growth (Clague 1997; Pieterse 2001; Vázquez-Barquero 2002). Endogenous growth theory acknowledges the important roles played by institutions, citing governance, trust, and cooperation as decisive factors in development outcomes (Vázquez-Barquero 2002). Along similar lines, NIE theory cites culture as one of the most important elements of development since it shapes and legitimizes institutions, which, in turn, shape the progress of economic growth (Clague 1997; Lavoie and Chamlee-Wright 2000).

Theories about the relationship between culture, institutions, and economic development have been validated through observation and experience (Anderson 1997; Cornell and Kalt 1991; Cornell and Kalt 1992). For example, researchers at Harvard University have spent many years trying to explain the outcomes of different economic development strategies in Aboriginal communities, and what it takes for self-determined development to be successful. Their findings underscore the importance of culturally appropriate economic development supported by strong institutions (Cornell and Kalt 1992; Duffy and Stubben 1998; Jorgensen and Taylor 2000). Accordingly, cultural norms should support and complement formal institutions of governance and provide guidance towards economic decisions, identifying those activities that best fit with a tribe's conception of what is appropriate (Cornell and Kalt 1992). Strong institutions confer legitimacy to tribal decisions and promote their efficient implementation, creating a favorable environment for economic investment and opportunity. The researchers' argument is that the chances of long-term development success increase for communities that are able to

match formal institutions of governance with cultural standards of governmental legitimacy.

The Harvard research also highlights the importance of sovereignty and appropriate development strategy. It contends that sovereignty forces communities to bear greater responsibility for the consequences of their decisions, providing a greater incentive to make appropriate choices (Cornell and Kalt 1992). In terms of development strategy, Aboriginal communities are faced with many choices, which may be constrained internally by their institutions of governance, asset endowments and cultural attributes, and externally by market opportunities and financial capital inflows. Communities usually have a high degree of control over their governing institutions and the type of development activity to pursue; moderate degree of control over their political sovereignty, access to capital, human capital, and culture; and a low degree of control over market opportunities, distance from markets and natural resource endowments (Cornell and Kalt 1992). By focusing on the factors that they can control and/or satisfying the internal and external constraints associated with different development paths, Aboriginal communities will enhance their chances of development success (Cornell and Kalt 1992).

Every culture has its own notions of success – be it more leisure time, a healthy environment, or a sense of community – which reflect its own unique values. According to Lavoie and Chamlee-Wright (2000), the question is, which of a society's cultural strengths are those that can help it to promote its *own* success, according to its *own* understanding of what success is. They argue that no society has absolute cultural advantage in favour of development, since notions of development success are culturally specific. But every culture has relative advantages that it can cultivate.

In terms of defining development success, most cultures today, Aboriginal or other, tend to want some form of material wealth and a higher standard of living for their citizens (Lavoie and Chamlee-Wright 2000). A consistent goal among Aboriginal communities is long-term profitability and employment (Cornell and Kalt 1992; Hashimoto 2002), the

development indicators most often examined in economic studies. However, many communities are also concerned about other quality of life and well-being criteria, including spirituality, cultural integrity, social cohesion, political and civic participation, effective political and legal institutions, kinship, health and safety, control over assets, environmental quality, personal efficacy, and future opportunities (Wuttunee 2004). These criteria are more difficult to measure and less often studied, and therefore can usually only be assessed by communities, themselves, in the context of their own aspirations.

2.4 Cultural Tourism as a Development Strategy

Aboriginal communities in Canada are typically characterized by mixed economies, whereby subsistence resource harvesting is combined, to varying degrees, with casual wage employment, usually also based on resource extractive industries, providing flexible systems of managing land, resources, time, and money (Grekin and Milne 1996; Notzke 1999). However, many communities are exploring alternatives to resource extraction to satisfy economic and social needs (McGinley 2003), a trend that is being achieved primarily through community- and self-entrepreneurship (Anderson 2000; McGinley 2003; Vázquez-Barquero 2002). Between 1981 and 1996, the number of Aboriginal-owned businesses in Canada grew by 210 per cent, a rate 2.5 times the national average, due to claims settlements, rising incomes, government-sponsored funding programs, and increased sovereignty over resource and mineral rights (Loizides and Greenall 2001). There are now over 20,000 Aboriginal-owned businesses in Canada (Sawchuk and Christie 1998). While business pursuits are largely based on primary industries such as fishing, forestry, farming, and contracting trades, they are increasingly expanding into other economic sectors, including tourism (Sawchuk and Christie 1998).

There are numerous economic and social arguments in favour of tourism as a development strategy (Hinch and Butler 1996; Nuryanti 1996; Sinclair 1998). Compared to resource extraction, tourism, properly managed, is perceived to be a sustainable economic activity that is compatible with Aboriginal values about the earth's sacredness

and its relationship to humans (Hinch and Butler 1996; Telfer 2002). In addition, Aboriginal People are seen to have a competitive advantage in tourism because of their unique cultural resources, supporting the argument that economic success and cultural survival can be mutually reinforcing (Canadian Tourism Commission 2000; Hinch and Butler 1996; McKercher and DuCros 2002). Since Aboriginal hosts are in a position to manage the cultural experience, they can pursue their involvement in tourism from a stronger position (Deutschlander and Miller 2003; Hinch and Butler 1996). There is also an argument that Aboriginal cultural tourism promotes understanding between Aboriginal and non-Aboriginal People, which can ultimately lead to more equitable relations for both groups, especially for the former (Deutschlander and Miller 2003; Hart, Steadman and Woods 1996; Hinch and Butler 1996; McIntosh 2004; McKercher and DuCros 2002).

Cultural tourism has critics too, who argue against the claim that indigenous people are its ultimate beneficiaries, citing the many costs – environmental, socio-economic, and cultural – inherent in this industry (Hinch and Butler 1996). Tourism can result in environmental overuse and deterioration of ecological assets due to increased traffic, and lead to problems such as pollution and overburdening of local resources, disrupting the local way of life (McKercher and DuCros 2002; White 1993). The shift to service-oriented occupations can be difficult, requiring skills that many communities are lacking (Timothy 2002). Tourism can also create short-term employment cycles, depending on tourist expenditure and the length of the tourist season, so it may not altogether eliminate employment instability and economic dependency (Keith, Fawson and Chang 1996). These factors can be exacerbated if there are limited community beneficiaries, which can cause be a source of divisiveness and discontent (McKercher and DuCros 2002). Even with equitable benefits, there are often mixed opinions about the prospect of outsiders entering the community (Notzke 1998; White 1993) due to a fear that they may form negative impressions of Aboriginal customs and practices and perpetuate this opinion to others (Grekin and Milne 1996), or that they may interpret Aboriginal culture in a way that perpetuates cultural myths or stereotypes (Ryan 2002). Communities must also decide on the level of authenticity they are prepared to negotiate with outsiders and be

prepared to experience some commodification of their culture as a result (Cornell and Kalt 1992; Hall 1996; McKercher and DuCros 2002). Accordingly, as Deutschlander and Miller (2003) point out, cultural identity, history, and traditions can be diminished if the cultural product is staged and deprived of its natural setting.

2.5 Demand for Cross-cultural Experiences

Various Canadian government and tourism industry reports have promoted Aboriginal tourism and cultural products as promising in generating revenue and providing economic enterprises consistent with Aboriginal culture (Canadian Tourism Commission 2000; Canadian Tourism Human Resource Council 2000; PwC Consulting 2002; Sawchuk and Christie 1998). According to the Canadian Tourism Human Resource Council (1999), Aboriginal tourism generated approximately $250 million a year in 1999 and has the potential to reach $1 billion within 10 years. A recent Aboriginal tourism product opportunity analysis by PwC Consulting (2002) for Alberta showed a high demand for Aboriginal cultural tourism products both at home and abroad, especially by mature and well-educated travelers. Alberta has been ranked the second best province in Canada, after British Columbia, for its potential to provide Aboriginal cultural tourism products (Hart, Steadman, and Woods 1996) and boasts 112 businesses offering such attractions, including Aboriginal-themed accommodations, cultural centers, festivals, and Aboriginal-guided adventure and eco-tours. Aboriginal accommodations, in particular, since they are so uncommon in Alberta, have been identified as an important product opportunity, whether in the concept of a backcountry lodge, a campground, or a resort (PwC Consulting 2002).

However, these reports of market potential are quite general, since they use national macroeconomic data and indicators as their basis, which limits their applicability toward market feasibility assessment in local contexts. For example, in their summary of the prospects of Aboriginal entrepreneurship in Canada, Sawchuk and Christie (1998) base their conclusions on macroeconomic data from Statistics Canada, Aboriginal Business Canada and the Royal Commission on Aboriginal Peoples, while PwC Consulting

(2002), in its assessment of the Aboriginal tourism potential in Alberta, bases its findings on data collected from the Canadian Tourism Commission, Aboriginal Business Canada, Industry Canada, Parks Canada, Statistics Canada, Travel Alberta, and various international consultant reports. These studies paid little attention to the economic feasibility of Aboriginal tourism in specific contexts and in consideration of the domestic tourist market. Their emphasis on international visitors ignores domestic tourism demand, which can account for a large degree of tourist expenditures. It accounted for 36.2 billion, or 70 per cent, of Canada's tourism revenue in 2003 (Canadian Tourism Commission 2003a) and 3.1 billion, or 71 per cent, of Alberta's tourism revenue for the same period (Alberta Economic Development 2004). Dependency on international markets has implications for domestic tourism operators, who may be left vulnerable to factors outside of their control, such as tourism promotion, exchange rates, and domestic health crises (Ryan 2002). For instance, a combination of economic shocks that included the possibility of war in Iraq, the SARS outbreak, a surfacing of West Nile virus, the Eastern Canada/US power blackout, a slump in the global economy, and Canada's increasing exchange rate were responsible for an 11 per cent drop in Canada's 2003 tourism revenue relative to the previous year (Canadian Tourism Commission 2003a; Canadian Tourism Commission 2003b), demonstrating that profitability may increasingly depend on the domestic market (Mason 2004).

There are only a handful of published economic feasibility studies that involve Aboriginal communities and none, that could be found, that assess the demand for Aboriginal cultural products as part of a community development strategy. There is also limited previous academic research linking the supply and demand aspects of Aboriginal cultural products, in general, and existing studies originate almost exclusively out of Australia and New Zealand, two countries that have also tried to capitalize on their high Aboriginal tourism potential (McIntosh 2004; Ryan and Huyton 2000a; Ryan and Huyton 2000b; Ryan 2002; Ryan and Huyton 2002). These studies are distinguished by survey-based, qualitative assessments of tourist preferences, their primary contribution being the inclusion of the domestic market to characterize tourist demand. Their results suggest that

attractions based on Aboriginal culture may not be as popular as generally thought, a finding that is at odds with many tourism industry studies.

Ryan (2002) and Ryan and Huyton (2000a; 2000b; 2002) surveyed tourists visiting Central Australia, Australia's Northern Territory, and New Zealand to analyze the demand for Aboriginal tourism using an importance-evaluation approach. They asked respondents to rate and rank various leisure activities and motivations. All four studies lead the researchers to conclude that there is little interest in Aboriginal (and Maori) culture and cultural products. The majority of respondents rate products based on Aboriginal culture as unimportant, give a low priority (ranking) to such products compared to other activities, and show a higher level of non-response to indigenous culture-related items compared to other topics, the latter attributed especially to New Zealand's domestic tourists (Ryan and Huyton 2002). The main level of interest in Aboriginal culture comes from a group they call "active information seekers" who comprise a small minority of the samples (only 17 per cent in one study) and are mostly overseas visitors who also have an interest in other activities based on knowledge-seeking (Ryan and Huyton 2000b), or whose interest in culture is contained within a perception of the landscape (Ryan 2002; Ryan and Huyton 2000a; Ryan and Huyton 2002).

McIntosh (2004) interviewed international tourists arriving and departing through Christchurch International Airport to explore perceptions of Maori culture and the extent to which tourists visiting New Zealand are culturally motivated (McIntosh 2004). Her findings also lead to the conclusion that previous claims concerning the demand for indigenous tourism may be inflated and culture is not the primary motive for visiting a destination for any tourist – international or domestic. Furthermore, she observed that most international tourists search for novelty and cultural difference, a possible indication that international visitors, who are also culturally distant, are more likely to appreciate Maori culture than domestic visitors. She also found that the little knowledge about the Maori held by international tourists was based on stereotypes.

Overall, these studies indicate that attractions meeting the intellectual motive for travel, including learning about Aboriginal culture, are unimportant, especially to the domestic tourist market. The types of data and methods used may explain the apparent contradictions about the demand for Aboriginal culture between academic and tourism industry reports. Studies showing high demand are usually meta-analyses carried out using macroeconomic indicators, whereas studies showing a lack of demand are typically survey-based approaches, where tourists are directly asked to state their preferences. Another explanation may be the tourist markets examined. In particular, studies which show a high demand for Aboriginal products are usually based on international tourists (McIntosh 2004; Notzke 1998) and, in fact, most demand for such products is attributed to the international market (Deutschlander and Miller 2003; Ryan and Huyton 2002; Sinclair 1998), especially Germany, the United Kingdom, France, Japan, and the United States (Hart, Steadman and Woods 1996), Canada's top international visitors (PwC Consulting 2002). Ryan's (2002) study investigating the appeal of New Zealand's Maori culture to the domestic market may provide further explanation. He found a lack of knowledge of Maori culture among the domestic population, little willingness to improve upon that knowledge, and a lack of interest in Maori cultural attractions. He suggests that the lack of spatial distance between the Maori and non-Maori population may inhibit exotic and romanticized conceptions of Maori culture and contribute to the non-Maori population's non-appreciation of the 'familiar'. The concept of the indigenous 'other' as exotic has been documented in the tourism literature, usually as an attitude attributed to European visitors, who are culturally and spatially removed from most indigenous peoples (McIntosh 2004; Ryan 2002).

2.6 Case Study: Heart Lake First Nation

The purpose of this research is to investigate the compatibility of culturally based recreational camping as part of an economic development strategy of the Heart Lake First Nation, located in the boreal forest of Alberta, Canada, approximately halfway between the major centers of Edmonton and Fort McMurray. The research evolved from a collaborative effort that took shape in a series of formal and informal discussions,

spanning approximately five months, between this researcher and the leadership of Heart Lake. Over the years, the people of this community lost access to much of their traditional activities, which has forced them to pursue other ways of making a living (Stevenson 2003). The community's leadership is intent on providing viable economic opportunities, by way of income and employment, to its citizens. One area currently being pursued for potential economic gain is resort/campground development. The community's development plan includes a campground, cabins, day use and playground area, a conference centre, boating facilities, a beach, ball courts, recreational and nature programs such as guided canoe trips and wildlife viewing facilities, and various amenities with an Aboriginal theme, including tipis, cultural activities, and cultural interpretation. It is the Aboriginal products that the community is hoping to capitalize on as a unique market opportunity. An important initiative for choosing this particular activity was the anticipated paving of the only access road to the community, to be completed by 2007/2008 (Alberta Government 2005), which is expected to increase the volume of traffic flowing through the corridor, since it is considered a more scenic road connecting the cities of Fort McMurray and Edmonton than an adjacent highway. One of the objectives of this study is to assess the demand for culture-based recreation in northeastern Alberta to evaluate the contribution that this demand could make toward economic development for the Heart Lake community, including the effect of improved road infrastructure on market share.

2.7 Economics of Outdoor Recreation

The economics of outdoor recreation is concerned with the supply of and demand for natural resources such as forests and lakes, and their associated benefits, for recreational consumption (McConnell 1985). According to McConnell, this branch of economics developed a) historically from government ownership of extensive tracts of land which, characterized by competing uses, led to various types of land-management policies such as the creation of national parks and forests and, b) more recently, from the emergence of the environmental movement, which developed from a growing awareness of the value of environmental assets and the recognition that conserving and improving their qualities

could create better recreational opportunities (1985). The latter development led to a view of the economics of outdoor recreation as a type of welfare economics, which emphasized the choice structures from which decision models are derived (McConnell 1985).

From a demand perspective, outdoor recreation is a service that is consumed by individuals, with the distinguishing characteristic of requiring them to transport themselves to a site in order to consume a particular service. Therefore, individuals' consumption decisions are a function of scarce resources such as time and the cost of transportation (McConnell 1985). From a supply perspective, outdoor recreation is a service that is provided by governments or private entities that are faced with opportunity costs for the natural resources they allocate toward recreational uses. Most of the economic study of outdoor recreation is focused on demand issues, which are, nonetheless, pertinent for making decisions about their supply.

There are three main methods of estimating the demand for and value of outdoor recreation: the travel cost, hedonic price, and stated preference methods (McConnell 1985). They share the common assumption that individuals are maximizing their welfare, or utility, but differ according to whether they are based on observed or hypothetical behaviour to estimate demand for recreational services (Freeman 1993). The travel cost and hedonic price approaches are based on observations of actual market choices made by individuals. They are revealed preference (RP) methods since recreational values are revealed (inferred) through market behaviour trails. The third approach, the stated preference (SP) method, which includes contingent valuation and attribute based stated choice methods, involves directly asking individuals about their values for outdoor recreation through hypothetical markets.

Both RP and SP methods have strengths and weaknesses but the most important advantage offered by SP methods, for the purposes of this study, is that their hypothetical framework makes it possible to estimate demand for goods not yet available or for new attributes of existing goods, and to vary explanatory factors that otherwise have little

variability in real markets (Louviere, Hensher and Swait 2000). Aboriginal cultural goods, in general, are rarely traded in markets and are, at present, not offered at campgrounds in northeastern Alberta, thus there are no revealed behavioural trails by which their value to campers can be determined. Consequently, in order to assess the potential changes in campground visitation that might occur as a result of introducing a facility that offers cultural attributes, it is necessary to ask individuals about their preferences for these attributes in hypothetical market situations (Boxall, Englin, and Adamowicz 2003; Ready and Navrud 2002).

Contingent valuation (CV) and Attribute Based Stated Choice Methods (ABSCM) are the most common stated preference methods but ABSCMs are more useful in this context because they provide a level of detail about individual preferences well beyond that afforded by CV studies, such as the capacity to estimate multiple values – as well as their relative importance – from a single application, and the capacity to provide statistically robust models of choice (Bennett and Blamey 2001). ABSCMs involve eliciting several choice responses from an individual in hypothetical settings (Louviere, Hensher and Swait 2000). The choice scenarios require individuals to trade off income against goods or services, such as beaches or cultural programs, providing an implicit way of measuring individuals' values for these attributes (Quentin et al. 2004). Each choice scenario is comprised of multiple alternatives, such as campgrounds, decomposed into attributes with varying levels. Scenarios are generated by a statistical design that combines attribute levels in such a way that they are independent of one another, allowing identification of individuals' underlying preference (indirect utility) function (Quentin et al. 2004).

The theoretical underpinnings of ABSCMs are drawn from a variety of disciplines, including economic theory, econometrics, statistical design, and mathematical psychology. Their foundation rests on the traditional microeconomic theory of consumer behaviour, which Lancaster clarified in the mid-1960s for the case where the demand for goods is related to their properties or attributes, a concept otherwise known as hedonics (Holmes and Adamowicz 2003; Louviere, Hensher and Swait 2000). At the same time, Luce and Tukey formulated a way of decomposing individuals' judgments of a set of

alternatives into a sum of the weighted attributes of the alternatives, with an emphasis on the preference heterogeneity of decision makers, a technique that became known as conjoint analysis (Holmes and Adamowicz 2003). In the mid-1970s, McFadden merged these concepts with Marschak's model of random utility to establish the conceptual foundation for the multinomial logit (MNL) model, also known as conditional logit, since it is conditional on choosing an alternative (Holmes and Adamowicz 2003).

Although some individuals claim that the hypothetical setting in which preferences are elicited in SP surveys generates artificial responses, or hypothetical bias, there is evidence that the underlying preference structures of revealed and stated preferences are very similar under certain conditions (Adamowicz, Louviere and Williams 1994; Louviere, Hensher and Swait 2000). For example, reliable SP data is conditional on respondents' ability to understand, commit to, and be able to respond to choice tasks (Louviere, Hensher and Swait 2000). When statistical design theories are used to construct choice sets, SP methods provide greater statistical efficiency than RP methods (Holmes and Adamowicz 2003). Furthermore, explanatory variables of SP models exhibit less collinearity than those derived from RP surveys since they are under the direct control of the researcher, adding robustness to valuation and prediction (Louviere, Hensher and Swait 2000).

2.8 Summary

The purpose of chapter 2 was to place this research into context by discussing some of the background related to the research topic, including the status of Aboriginal People in Canada, development theory, the pros and cons of tourism, demand for cultural tourism, and economic approaches used to assess recreational tourism demand. The next chapter provides the theoretical basis for one of these approaches and discusses the research methods used to carry out this study.

Chapter 3: Methods

3.1 Introduction

This chapter focuses on the methods of survey design, data collection, econometric modeling and estimation, and policy assessment. Section 3.2 provides an overview of discrete choice and random utility theory and discusses aggregate forecasting techniques. Sections 3.3 to 3.5 outline the various elements of the designed survey and data procurement. Last, sections 3.6 and 3.7 describe the procedures used for model estimation and policy evaluation.

3.2 Modeling Campground Choice in a Random Utility Framework

Microeconomic consumer theory presents a framework for understanding individuals' preferences for goods and transforming them into equations that express the actions they may take under given economic scenarios. The theory is built on the premise that individuals have the ability to evaluate alternative goods and base their choices on the relative attractiveness of the alternatives (Ben-Akiva and Lerman 1985). The index of attractiveness is utility, which individuals attempt to maximize through their choice, subject to a budget constraint. Individuals are assumed to behave rationally, meaning they have consistent and transitive preferences. In other words, their choice behaviour is consistent with the decision rule of utility maximization (Ben-Akiva and Lerman 1985).

When consumer theory is applied to campground choice, alternate camping destinations are viewed as heterogeneous goods that have particular qualities, or attributes, and demand is modeled as selection from a finite set of discrete bundles of attributes (i.e. campgrounds) on independent choice occasions (Ben-Akiva and Lerman 1985). For any individual n, each camping destination, x_i, has an associated utility, so that different destinations can be ordered by individuals according to their preferences. That is, if an individual prefers campground x_1 to campground x_2, then the utility associated with campground x_1 is at least as large as that associated with x_2, or $U(x_1) \geq U(x_2)$. Preferences

for campgrounds are formed by their quality attributes, q_i, and individuals select the most preferred bundle of attributes that satisfies their budget constraint, leading to the following optimization problem:

$$\begin{aligned} & MaxU(x_i...x_J, q_i...q_J; z) \\ \text{subject to} \quad & \sum p_i x_i + z \leq M \\ & x_i x_j = 0 \quad \forall\, i \neq j \\ & x_i = x_i^* \quad \forall\, i \end{aligned} \tag{3.1}$$

where x_i is one campground from $i = 1,2,...J$ alternative campgrounds; q_i is vector of campground attributes; z is a numeraire good that represents all other goods purchased, with price normalized to one; and M is income. The second and third constraints introduce the discrete choice elements into the model, implying, respectively, that campgrounds are mutually exclusive in consumption and they can only be consumed in fixed quantities, for example a single trip to a recreation site (Hanneman 1999; Quentin et al. 2004).

Maximization of the above utility function subject to the constraints shown generates a conditional indirect utility function that describes the utility experienced by individual n, conditional on choosing alternative i (Quentin et al. 2004). It can be expressed as

$$V_{in} = V(q_{in}, M - p_{in}, s_n) \tag{3.2}$$

where V_{in} is a function of the vector of campground attributes q, prices p, income M and a vector of the socio-economic characteristics of the decision maker, s (Ben-Akiva and Lerman 1985).

The conditional indirect utility function above is deterministic, in the sense that it would yield an individual's demand for a campground if there were no uncertainties associated with how it is revealed and measured. In fact, there are several reasons why utility may

be stochastic. Random utility theory holds that uncertainty results from observational deficiencies on the part of the analyst, preserving the assumption of rational choice, or utility maximization. In the random utility model (RUM), utility is treated as a random variable due to unobserved tastes, omitted attributes, measurement errors, or use of instrumental variables in utility specification (Ben-Akiva and Lerman 1985). In this framework, the utility of individual n consists of an observable, or systematic, component V and a random component ε, comprised of all unobserved effects

$$U_i = V_i + \varepsilon_i \tag{3.3}$$

The general form of the indirect utility function can be augmented with this uncertainty as follows:

$$V_{in} = V(q_{in}, M - p_{in}, s_n, \varepsilon_{in}) \tag{3.4}$$

Let the universe of alternatives C available to individual n represent the individual's feasible choice set C_n. If C_n describes the alternatives available to individual n, the probability of choosing the i^{th} camping destination is equal to the probability that the utility of the i^{th} destination is greater than or equal to the utilities of all other camping destinations in the individual's choice set. This can be written as (based on Ben-Akiva and Lerman 1985)

$$\begin{aligned} P(i \mid C_n) = P_{in} &= \Pr\{U_{in} \geq U_{jn}, \quad \forall\, j \neq i,\ i, j \in C_n\} \\ &= \Pr\{V_{in} + \varepsilon_{in} \geq V_{jn} + \varepsilon_{jn}, \quad \forall\, j \neq i,\ i, j \in C_n\} \\ &= \Pr\{V_{in} - V_{jn} \geq \varepsilon_{jn} - \varepsilon_{in}, \quad \forall\, j \neq i,\ i, j \in C_n\} \end{aligned} \tag{3.5}$$

The probability of choosing a camping destination depends on the information captured in the systematic component of utility and the specification of the random component.

The most common error specification is the Gumbel[2] distribution, which assumes independently and identically distributed (IID) error terms, in which case the choice probability is expressed in logistic form as

$$P_{in} = \frac{e^{\mu V_{in}}}{\sum_{j \in C_n} e^{\mu V_{jn}}} \qquad 3.6$$

where μ is a scale parameter inversely related to the variance of the error term (Quentin et al. 2004). The above equation is known as the conditional logit model, since it represents a probability that is based on evaluation of the conditional indirect utility function for each alternative. It is also often referred to as the multinomial logit (MNL) model when there are more than two choice alternatives. Equation 3.6 can be expanded to a form that provides more information about the components of the indirect utility function[3] (based on Quentin et al. 2004)

$$P_{in} = \frac{e^{\mu V_{in}(M-P_i, q_i)}}{\sum_{j \in C_n} e^{\mu V_{jn}(M-P_j, q_j)}} \qquad 3.7$$

and, if the utility function contains many quality attributes, the MNL model can be written as follows (based on Quentin et al. 2004):

$$P_{in} = \frac{e^{\mu \beta' x_i}}{\sum_{j \in C_n} e^{\mu \beta' x_j}} \qquad 3.8$$

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[2] The Gumbel distribution approximates the normal distribution but is computationally more convenient (Ben-Akiva and Lerman 1985). However, its assumption that error terms are identically and independently distributed (IID) is a restrictive condition that can sometimes lead to erroneous predictions. One method of relaxing the IID assumption is discussed later in this section.

[3] Since socio-economic characteristics are constant across alternatives, they drop out of the utility difference equation (3.5) and thus are not included in the probability expressions (3.6 to 3.8) (Quentin et al. 2004), however they can be included in the model as independent variables if they are combined with other attributes (for example, income interacted with price) using either theory or existing empirical evidence as a guide (Louviere, Hensher and Swait 2000).

where β represents the coefficients of the indirect utility function and x_i is a vector of quality attributes, including price. Given a specification for the probability of choosing an alternative (equation 3.8), maximum likelihood techniques are used to derive the coefficients of the indirect utility function (Louviere, Hensher and Swait 2000).

The MNL model is a highly popular initial approach for modeling choice behaviour but it has several limitations. The model's shortcomings stem from the Gumbel distribution to define choice probabilities, which carries the following assumptions (Train 1998): 1) coefficients entering the indirect utility function are the same for every individual, in other words, different people with the same observed characteristics have the same tastes; 2) repeated choices by one individual over time have independent sources of error when, in fact, unobserved factors affecting individuals' decisions are expected to persist, at least somewhat, over time; and 3) a change in the attributes of one alternative affects other alternatives in the same proportion, a property known as independence of irrelevant alternatives (IIA), and one that imposes restrictions on individual preferences (see Ben-Akiva and Lerman 1985).

One way of relaxing these assumptions is to use a mixed logit or random parameters logit (RPL) specification to define choice probabilities, which is a generalized form of logit that allows the coefficients of observed variables to vary randomly over people, rather than fixing their distributions across individuals (Train 1998). This type of specification, though computationally more intensive than MNL, not only allows for taste differences across individuals to influence choice probabilities but also relaxes the other assumptions outlined above. In particular, RPL does not exhibit the IIA property that characterizes MNL, thus permitting many patterns of substitution across alternatives (McFadden and Train 2000; Train 1998). The result is a model that captures a greater amount of behavioural variability in choice making (Hensher and Greene 2001).

In keeping with the random utility framework, the conditional indirect utility function for a RPL model can be written as (based on Train 1998)

$$V_j = \beta x_j + \eta S_j + \varepsilon_j \qquad 3.9$$

where βx_j is the standard set of attributes of the indirect utility function, followed by an additional random component of utility, ηS_j, and the standard Gumbel error term, ε_j. The S_j term represents a vector of observed variables associated with alternative j, and η is a vector of random terms with zero mean, representing individuals' unobserved tastes. The η term is correlated over sites and trips, implying that a camper evaluates each site and each trip with the same tastes. Since the unobserved portion of utility, $\eta S_j + \varepsilon_j$, is correlated over sites due to η, RPL does not exhibit the IIA property characteristic of standard logit. Through controlled specification of variables and parameters, it is possible to obtain general or specific correlation patterns and substitution arrangements.

When the distribution of ε_j is the same as for the standard logit, the probability of a camper n choosing site i is given by the logit probability equation

$$P_{in} = \frac{e^{\beta x_i}}{\sum_{j \in C_n} e^{\beta x_j}} \qquad 3.10$$

Random parameters logit generalizes this equation by allowing the vector of coefficients, β, to vary with campers' tastes (Train 1999). Tastes vary in the population with density $f(\beta|\theta^*)$, where θ^* represents the mean and standard deviation of the distribution, and the choice probability ascribed to any camper is the integral of equation 3.10 over all possible values of β, weighted by the density of β. This can be expressed as follows:

$$\pi_{in} = \int P_{in}(\beta) f(\beta \mid \theta^*) d\beta \qquad 3.11$$

where π_{in} is the probability that individual n chooses campground i from set J and P_{in} is the logit function evaluated at β. Essentially, a RPL is a weighted average of standard logits evaluated at different points, where the weights are determined by the density $f(\beta|\theta^*)$, called the mixing distribution.

The MNL and RPL models deliver all of the major behavioural response outputs, including choice elasticities, marginal rates of substitution between campground attributes and measures of the value of attributes in utility or dollar units, the latter made possible if price is included as an attribute (Louviere, Hensher and Swait 2000). They can also be used to make forecasts of aggregate demand, such as the proportion of the population visiting a particular type of campground.

3.2.1. Aggregate Forecasting from the MNL Model[4]

According to Ben-Akiva and Lerman (1985, p.133), "the problem of aggregating across individuals is to develop methods for reducing the required data and computation needed to predict aggregate usage of various alternatives." An aggregate population, defined as T, has an estimated number of decision makers N_T, with a probability of an individual decision maker n choosing alternative i, defined as $P(i|x_n)$, where x_n represents all the attributes affecting choice for that individual. If the value of x_n was known for every individual, the total expected number of individuals in T choosing i, denoted $N_T(i)$ is

$$N_T(i) = \sum_{n=1}^{N_T} P(i \mid x_n) \qquad 3.12$$

Alternately, if one wishes to predict the share of the population choosing i, denoted $W(i)$, then

$$W(i) = \frac{1}{N_T} \sum_{n=1}^{N_T} P(i \mid x_n) \qquad 3.13$$

However, the above equations require knowledge about every individual's complete vector of choice-relevant attributes, x_n, posing unrealistic data requirements. Even if such

[4] This section is based on Chapter 6 in Ben-Akiva and Lerman (1985).

information were available, the equations would be computationally infeasible, even for a small population (Ben-Akiva and Lerman 1985). In addition, $P(i|x_n)$ can only be estimated, since the choices of individuals, and hence the underlying parameters, are probabilistic. Nonetheless, there are alternate aggregation methods that approximate equations 3.12 and 3.13 in some way, reducing the data requirements and computational burden, at the expense of forecast accuracy. These alternative methods ease the problems of aggregate forecasting by making simplifying assumptions about the choice model, the population, or both. Two of the most widely used methods are classification and sample enumeration.

Classification is useful when spatially disaggregated behavioural predictions are desired (Ben-Akiva and Lerman 1985), as may be the case when demand patterns differ for individuals at different locations. For example, if one would like to predict the number of individuals from the population of northeastern Alberta campers that would choose to visit a proposed new campground, distance to the campground may be an important causal factor, making it practical to partition the population by distance from the campground, or, alternately, city of origin.

To apply the classification method, the population is partitioned into G mutually exclusive, collectively exhaustive groups, each corresponding to the segment of the population with the set of attributes equal to X_g; the number of decision makers in each group, N_G, is estimated; and a representative value $\tilde{x}_g$ assigned to each group. Then, the share of the population choosing i is

$$W(i) \cong \sum_{g=1}^{G} \frac{N_G}{N_T} P(i \mid \tilde{x}_g) \qquad 3.14$$

where each of the groups contributes to the forecast in proportion to its share of the population, denoted by N_G/N_T. The goal of classification is to establish groups in which the within-group variation in indirect utilities is small; in other words, to establish behavioural units that respond in the same way to the distance variable. In the current

application, the utilities are constant within groups since distance to the campground is the only attribute that changes across groups. In addition, the classifying variable should be important to the choice process, in terms of having a large bearing on the systematic utility of at least one alternative, and have a wide range across the population. In this particular case, distance is the attribute that drives the choice process so it is widely distributed across and disproportionately affects different segments of the population.

The sample enumeration method of aggregate forecasting takes a random sample of the population to represent the entire population and uses the predicted share of the sample choosing alternative *i* as an estimate of *W(i)* as follows

$$\hat{W}(i) = \frac{1}{N_s} \sum_{n=1}^{N_s} P(i \mid x_n) \qquad 3.15$$

where N_S represents the number of decision makers in the sample.

The forecasting approach used in this thesis was a combination of classification and enumeration. The individuals in the sample were partitioned into groups according to their city of residence, generating a different set of choice-relevant attributes for individuals across cities. Then, knowledge of the proportion of the sample representing each city was used to weight the cities' share of trips to any campground. This latter procedure is the key similarity with the enumeration method, in that the characteristics of the sample, rather than the population, were used to predict the share of individuals choosing any alternative. This was necessary, as the number of decision makers in each of the groups could not be estimated at the population level. In mathematical terms, the predicted share of the sample belonging to group *g* and choosing alternative *i* can be expressed as

$$\hat{W}(i) = \sum_{g=1}^{G} \frac{N_{sg}}{N_s} P(i \mid x_g) \qquad 3.16$$

where N_{sg} is the number of decision makers in the sample belonging to group g. Then, the number of individuals in the population that would choose alternative i can be predicted as follows:

$$\hat{N}_T(i) = \sum_{g=1}^{G} N_T \left(\frac{N_{sg}}{N_s} \right) P(i \mid x_g) \qquad 3.17$$

3.3 Survey Design

There were two modes of data collection. The first was a personal interview, intended to introduce individuals to the survey topic and to recruit participants for the study, and the second was a mail-out survey, designed to collect data for the purpose of analyzing factors that affect respondents' camping decisions. The survey instruments can be found in Appendix A.

The personal interview consisted of about 10 questions, the majority relating to the nature of the camper's current trip, including length of stay, party size, and time elapsed since the previous visit to that campground. The remaining questions were related to past camping trips. Two of these in particular – whether the interviewee's family or group had participated in an interpretive program or guided tour in the past year and whether they had ever camped at a privately- or municipally-owned campground – were intended to provide a quick assessment of the fit of the (Heart Lake) proposed resort to participants' interests and experience.

The mail-out portion of the survey was comprised of four sections. The first asked participants about their camping trips to northeastern Alberta in the past year and was intended to get respondents thinking about camping and reveal some of their camping preferences (such as for services, distance, and leisure opportunities), in general. Some of the questions in this section were adapted from McFarlane and Boxall (1999). With the

aid of a map of provincial[5] northeastern Alberta campgrounds, participants were asked to indicate on a list the campgrounds they had visited and to write down up to five that were not listed. There were also questions about the number of camping trips taken, the most frequently visited campgrounds, activities pursued while camping, and an exercise that asked respondents to rank the importance of various criteria for choosing a camping destination. A ranking exercise, in particular, is considered useful because it evokes the concept of the trade-off, the key feature of the upcoming section on choice, and the basis of the survey (Bennett and Adamowicz 2001).

The second and third sections of the survey required respondents to make trade-offs. The former was a choice experiment designed to assess the substitutions that respondents are willing to make among characteristics associated with hypothetical campgrounds. The latter was a best-worst experiment designed to assess respondents' motivations for camping, in scenarios that forced them to choose, from among competing motivations, those most and least important to them. These two portions of the survey are further explained in sections 3.3.1 and 3.3.2.

The fourth and final section of the survey inquired about the demographic characteristics of respondents, including gender, education, income, and the age profile of the household. There were also questions about membership in outdoor/nature organizations and the types of camping and related equipment owned.

3.3.1 The Choice Experiment

A choice experiment involves presenting an individual with a set of two or more alternative campgrounds comprised of experimentally designed attributes, such that the individual's choice of a preferred camping option from this set will indicate his or her preferences for the attributes. Each scenario of camping alternatives is a choice set and an experiment typically involves presenting individuals with multiple such sets. The task of

[5] Only provincial campgrounds were included since there was no map available that depicted and labeled all types of campgrounds (provincial, municipal, county, and private).

choosing the number of choice sets in a survey, alternatives in a choice set, and attributes to represent these alternatives, as well as their levels, requires careful consideration, since the number of choice sets required for an experiment increases with the number of alternatives, attributes, and levels. That is, the more complex the survey design, the longer the survey required to properly identify the effects of attributes on respondents' decisions, and the more demanding the process on respondents' patience and cognitive ability (Bennett and Adamowicz 2001). On the other hand, more information can be extracted about respondents' preferences with a more complex choice experiment design. Survey design requires a balance between these trade-offs.

In this experiment, respondents were asked to choose from one of three alternatives: two generic[6] camping destinations and a "neither" option. The survey consisted of eight such choice scenarios described by seven attributes. This design framework is consistent with most stated choice experiments, which are typically characterized by three alternatives, including an option not to choose, and five to six attributes in eight, or sometimes 16, choice sets (Blamey, Louviere and Bennett 2001; Holmes and Adamowicz 2003). A "neither campground/stay-at-home" option was included to reflect the reality that consumers are not usually obligated to choose goods in real markets and allows for the possibility to choose not to go camping if neither alternative is satisfactory to the individual (Holmes and Adamowicz 2003). If neither campground appeals to respondents, forcing them to choose one or the other can bias the estimates of demand for campground attributes (Louviere, Hensher and Swait 2000).

The task of choosing attributes and their levels required identifying the characteristics of campgrounds influencing destination choice. The challenge was to reduce the many important characteristics identified to a few, in order to minimize design and cognitive complexity, and to define them realistically, so respondents are faced with choices similar to those found in real situations. The task of choosing the attributes was aided, in large

[6] Generic alternatives are thought to result in more deliberate and informed choices than labeled, or branded, alternatives by minimizing choices that may be based on attributes implied by the labels. Generic alternatives also avoid the problem of collinearity between labels and omitted attributes (Louviere et al. 2000).

part, by a pilot test and previous research efforts, especially those of Dosman (2000). The Alberta Campground Guide (Travel Alberta 2003) was a valuable source for determining the levels of some attributes.

The challenge remained to incorporate a cultural element, and in a way that would be meaningful for respondents and relevant for future decisions about cultural programs and services (Holmes and Adamowicz 2001). Since cultural activities are not typically offered at Alberta campgrounds, respondents were expected to have little familiarity with this topic. Thus, it was important to adequately define this attribute but without undue emphasis or exclusion[7], relative to other attributes, to avoid "competition" with the other attributes in length of description and implied importance. It was decided the best way to incorporate the cultural component was under the guise of "educational experiences," which placed activities like Aboriginal cultural ceremonies and tipi camping under the same attribute heading as wildlife viewing opportunities and guided canoe trips. This was accomplished by creating categories of educational experiences, namely nature tours and cultural events, rather than different levels (of provision) of one type of experience. This was perceived to be the best way to include both nature and cultural programs in one attribute and still allow for the possibility to distinguish between them for the purpose of demand analysis, which was important, since the First Nation was prepared to offer both. Ideas for defining the educational attribute came from various sources, including the First Nation's business proposal (Oostendorp 1999) and Canadian and Australian literature on cultural tourism (PWC Consulting 2002; Ryan and Huyton 2002).

The final design consisted of the following seven campground attributes: level of services, presence or absence of fishing opportunities; presence or absence of a beach; privacy of campsites; distance to the campground; fees; and, last, types of educational opportunities. Each attribute was presented in discrete levels that provide a way of measuring the effect of changes in these levels on camping decisions. The attributes and their levels are described briefly in Table 3-1 and in detail in Appendix A.

[7] Exclusion here refers to depicting cultural programs and services in a very obvious way, such as, for example, incorporating them into one attribute and calling it Cultural Activities. This would be highly out of context for respondents lacking any experience with cultural programs at campgrounds.

3.3.1.1 Experimental Design

The choice experiment was derived from a statistical design that combined attribute levels in such a way that they were orthogonal, or independent of one another. The design was based on the four 4-level and three 2-level attributes presented in Table 3-1, in two alternatives, generating $(4^4 \times 2^3) \times (4^4 \times 2^3)$ total effects. The third alternative was consistent across choice sets so it did not contribute to the design requirements. Since all effects could not be tested, a fractional factorial based on all linear and some nonlinear effects was selected, producing 64 choice sets, twice the fraction required by the smallest main effects plan.

Table 3-1 Attributes and Levels Investigated in Choice Experiment

Attribute	Level
Level of Services	Minimally Serviced
	Moderately Serviced
	Well Serviced
	Fully Serviced (base)
Distance from Home	150 km
	250 km
	350 km
	600 km
Camping Fee	$7
	$17
	$23
	$32
Unique Educational Experiences	Nature Tours
	Cultural Events
	Both Nature Tours and Cultural Events
	Neither Nature Tours or Cultural Events (base)
Fishing	Yes
	No (base)
Swimming/Beach	Yes
	No (base)
Privacy/Trees	Private
	Open (base)

Note: 'base' refers to the base level in effects coding (see section 3.6)

The smallest main effects plan is determined by the degrees of freedom required to estimate the entire set of effects, or the full factorial (Louviere et al. 2000). The total degrees of freedom are acquired by summing the product of each main effect and its degree of freedom, where each main effect has exactly L-1 degrees of freedom. In this two-alternative case, there are 4 x 2 main effects with 3 degrees of freedom and 3 x 2 main effects with 1 degree of freedom, for a total of 30 degrees of freedom plus one for the intercept. Thus the smallest main effects plan could be captured by 2^6 or 32 choice sets. Since this represents a nearly-saturated[8] design, 64 choice sets are also appropriate. In addition, since use of the smallest main effects plan is akin to assuming that all higher-order interactions are insignificant (Louviere, Hensher and Swait 2000), 64 choice sets may be more appropriate to capture the main and potential two-way interactions of the quantitative variables. Sampling a higher fraction of the design space improves the capability of the design to explain the relationship between choice probabilities and attribute levels by improving the precision of the parameter estimates (Bennett and Adamowicz 2001). In this case, however, this gain in statistical information may have been offset by a slight loss in sampling efficiency due to use of a larger than minimum required number of runs.

SAS software was used to generate a near-orthogonal[9] design consisting of 64 choice sets. These were arranged into eight versions using a blocking attribute and each set of eight examined for dominant or implausible alternatives. A few alternatives were found to be dominant and these were modified, along with any subsequent level imbalance that resulted. Although making such adjustments to the alternatives can reduce the orthogonal character of the design (Bennett and Adamowicz 2001), the correlation matrix of the adjusted choice sets showed no extreme cases. That is, there was no serious correlation (the highest being 0.18) between any of the variables. Table 3-2 shows a sample choice set from the choice experiment.

[8] A saturated design has as many runs, or choice sets, as degrees of freedom (Kuhfeld 2004).
[9] A perfectly orthogonal design was not possible since there were two attribute levels – two-level and four-level – represented in the design.

Table 3-2 Sample Choice Set Used in Choice Experiment

Campground Characteristics:	Campground A	Campground B	Neither Campground / Stay Home
Level of Services	Well Serviced	Well Serviced	
Fishing	Yes	Yes	
Swimming/Beach	Yes	No	
Privacy/Trees	Open	Private	
Unique Educational Experiences	Both Nature Tours and Cultural Events	Nature Tours	
Distance from home	350 km	250 km	
Camping fee per night	$23	$23	
Which option would you choose? (Check (✓) one box.)	❒	❒	❒

3.3.2 The Best-Worst Experiment

This portion of the survey was designed to assess respondents' motivations for camping or, alternately, the benefits that camping provides for respondents. It is based on a choice modeling technique called Maximum Difference Scaling, which permits separate identification of the weight and scale values of attributes in multi-attribute judgment tasks, something that is not possible with traditional conjoint or experimental choice analysis (Louviere and Swait 1997). Here it is adapted to modeling motivations for camping, allowing intra- and inter-item comparison of camping benefits by measuring them on a common, interval scale. It is superior to both ranking and rating tasks since, unlike ranking tasks, it does not suffer from order effects, it allows ties, and can provide an absolute ranking of items; and, unlike rating tasks, the maximum difference method does not result in scale use bias, thus preventing respondents from choosing consistently

high/low or "middle-of-the-road" scores (Cohen 2003). This experiment is an alternative mechanism for investigation of preferences for cultural attributes.

Table 3-3 shows the set of camping benefits that were chosen to investigate, a task aided by Boxall and Adamowicz (2002), Heung et al. (2001), and Ryan and Glendon (1998). The statements were selected to broadly represent four factors that may be motivating respondents, namely 'spending time with others,' 'getting away from it all,' 'discovering new places,' and 'personal improvement.'

Table 3-3 Camping Motivations Investigated in Best-Worst Experiment

Motivation for going camping	Motivational attributes investigated
Spending time with others	Spending time with family and friends (base)
Getting away from it all	Escaping the hustle and bustle of daily life Relaxing mentally and physically
Discovering new places	Visiting places that have unique attractions Traveling to a place I've never been
Personal improvement	Challenging my outdoor skills Increasing my knowledge about nature

Using an experimental design, these benefits were placed into sets of three that were presented to respondents one at a time. In each set, respondents were asked to choose the most important (best) and least important (worst) motivation, resulting in a best-worst pair with the maximum difference (Cohen 2003). It is assumed that respondents examine every possible pair in each subset and choose the most distinct pair as the best-worst. The number of times an item is chosen as best or worst provides the necessary and sufficient information to estimate both the weight and scale position of each benefit (Louviere and Swait 1997). The choice of a pair of items from the set of three can be modeled as (after Buckley, Devinney and Louviere 2004)

$$D_{ij} = \delta_{ij} + \varepsilon_{ij} \qquad 3.18$$

where D_{ij} is the true difference between items i and j on the underlying benefits scale, δ_{ij} is an observable and measurable component of the difference and ε_{ij} is an error component associated with each pair of items. Then, the probability of choosing i as "most important" and j as "least important" can be expressed as

$$P(ij \mid C_n) = \Pr\{(\delta_{ij} + \varepsilon_{ij}) \geq Max(\delta_{kl} + \varepsilon_{kl}), \quad \forall\, k,l \in C_n\} \qquad 3.19$$

where $Max(\delta_{kl} + \varepsilon_{kl})$ is the largest of all other differences in the set C (Finn and Louviere 1992). Random utility theory provides the basis for estimating the choice data and if a Gumbel error distribution is assumed, the probability of choosing the best-worst pair can be expressed in the form of the MNL model as follows (Finn and Louviere 1992):

$$P_{ij} = \frac{e^{\delta_{ij}}}{\sum_{k,l \in C_n} e^{\delta_{kl}}} \qquad 3.20$$

The best and worst choice data were estimated independently and jointly to produce an aggregate ordering of camping motivations on a utility scale. Louviere and Swait (1997) discuss that joint estimation is possible if systematic utility is independent of whether a best or worst choice is being made and under the reciprocity condition that $V^B = -V^W = V$, which implies that the ratio of the scale factors (error variance) in the best (B) and worst (W) systematic utility functions is one. This is an acceptable assumption if respondents are consistent in their best and worst judgments; that is if they do not respond differently to extreme (i.e. the best and worst) vs. non-extreme stimuli (Louviere and Swait 1997).

3.3. 2.1 Experimental Design

A properly designed best-worst experiment will force respondents to make tradeoffs, preventing them from liking or disliking all benefits. It will also control for order and context effects: each benefit should occur in every position (first, second, third, etc.) across subsets and each benefit should occur with every other benefit an equal number of times. A balanced incomplete block (BIB) design was used to assign the above seven benefits associated with camping to seven sets of three benefits each. Across the sets,

each benefit occurred three times, every possible pair of items occurred together once, and each benefit appeared once in each of the three positions in a set. The design satisfies $n = rv = bk$ and $\lambda(v-1) = r(k-1)$, where v is the number of attributes, b is the number of blocks, r is the number of replications of an attribute, k is the number of items per block, n is the number of experimental treatments, and λ is the number of times each pair of attributes occurs together in a block. A BIB refers to a design that satisfies an integer solution for λ with $k < v$ (Cox and Reid 2000). There was one version of the best-worst experiment, consisting of seven choice sets, two of which are shown in Table 3-4.

Table 3-4 Sample Choice Sets Used in Best-Worst Experiment

Most Important (Check ONE box)	Reasons for Camping	Least Important (Check ONE box)
❒	Visiting places that have unique attractions	❒
❒	Escaping the hustle and bustle of daily life	❒
❒	Relaxing mentally and physically	❒

Most Important (Check ONE box)	Reasons for Camping	Least Important (Check ONE box)
❒	Increasing my knowledge about nature	❒
❒	Challenging my outdoor skills	❒
❒	Escaping the hustle and bustle of daily life	❒

3.4 Survey Testing

Once the mail survey was finalized and approved by the faculty ethics board, it was administered to about 10 active campers from the Department of Rural Economy. They were asked for general feedback about the survey and specifically asked to comment on the clarity of the instructions, the appropriateness of the attributes, the relevance and level of difficulty of some survey sections, and the length of time needed to complete the entire questionnaire. After these comments were integrated into the survey, a revised version

was taken to Long Lake Provincial Park in June 2004 for pilot testing. Twenty campers were briefly interviewed, then invited to complete the entire survey and write down their comments or discuss them with the interviewer. The pilot tests were useful for determining the willingness of individuals to participate in the survey and complete all of the sections, and helped to establish the amount of time needed to complete the survey.

3.5 Data Collection

Preliminary data collection and participant selection occurred in July and August 2004 at select campgrounds in northeastern Alberta. Intercept surveying, which takes place in-person at the site of the activity of interest, is generally considered acceptable for populations that are widely dispersed and not easy to identify, who are unlikely to respond willingly to a survey by mail or telephone, and who are being asked to respond to a relatively complex questionnaire (Champ 2003). The region from which sampling units were chosen was restricted to a rectangular area north of Highway 16, west of the Saskatchewan border, south of the city of Fort McMurray, and east of Highway 44. This restriction was necessary both to reduce the sample frame to a manageable size and to one that was centered on the proposed First Nation resort. Since the resort was expected to draw most of its market share from surrounding campgrounds, it was considered safe to delimit the population of interest to the above boundaries.

At the outset, both provincial and private campgrounds were considered as potential sampling sites, however, given the time limit imposed by a short Alberta camping season and the convenience of working under one research collection permit for all the provincial sites, it proved more efficient to limit surveying to provincial campgrounds. This factor did not necessarily contribute to sample bias because many respondents indicated they had also visited private campgrounds in the current camping season and in the past. Sampling thus took place at the following six sites: Beaver Lake Provincial Recreation Area, Cross Lake Provincial Park, Gregoire Lake Provincial Park, Long Lake Provincial Park, North Buck Lake Provincial Recreation Area, and Pinehurst Lake Provincial Recreation Area. These campgrounds were selected to maximize the

probability of encountering campers, therefore factors such as the number of campsites at the campground, the number of historic camper visitor nights, and the number of occupied nights per campsite were all considered. Based on these criteria, there were campgrounds more preferable to the ones listed but it was not possible to survey at these sites due to simultaneous surveys being conducted there by Alberta Parks and Protected Areas.

The sample of campers was purposive: the goal was to interview as many households as possible at any given campground, on any given sampling occasion, rather than randomly select them for interviews. This was done to optimize time and budget resources. Since campgrounds were not always filled to capacity, choosing a random sample from an already small population of campers would have resulted in very low recruitment rates and difficulty in achieving the desired sample size for the survey, in the time available. This is also the reason why most of the sampling took place on weekends.

Campers were approached by the interviewer at their campsites or at recreation sites such as beaches and playgrounds and asked if they would be willing to answer a few questions about their current camping trip. Every effort was made to balance the gender and age of the interviewed respondents, even though they were asked to reply to all questions as a household. The interviews were used primarily as a recruitment device for participation in the mail survey.

In total, 509 interviews were conducted, with very few individuals refusing to take part in the interview process. Of the 509 households that were interviewed, 452 agreed to take part in the mail survey. The mail-out procedure proceeded in two steps. In September 2004 all participants were sent a survey with a cover letter explaining the study more fully, along with a gift certificate of a small denomination to a coffee establishment, as an incentive to return the survey within one month. Participants who did not send back their survey within this time were sent a reminder letter. The response rate was 57 per cent, some 9 per cent less than that required for the target sample size of 300 respondents. The

response rates and proportion of each version of the survey returned are listed in Table 3-5, while Table 3-6 shows a breakdown of respondents by interview location.

Table 3-5 Response Rate for Mail Survey and Proportion of Each Version Returned

Survey Version	Number Sent	Number Received	Response Rate
1	56	29	51.8 %
2	56	33	58.9 %
3	56	37	66.1 %
4	56	37	66.1 %
5	57	25	43.9 %
6	57	30	52.6 %
7	57	35	61.4 %
8	57	36	63.2 %
Total	452	262	58.0 %
Total Useable		259	57.3 %

Table 3-6 Classification of Survey Respondents by Interview Location

Campground of Interview	Proportion of Total Respondents
Beaver Lake Provincial Recreation Area	14.1 %
Cross Lake Provincial Park	13.4 %
Gregoire Lake Provincial Park	11.8 %
Long Lake Provincial Park	46.2 %
North Buck Lake Provincial Recreation Area	13.0 %
Pinehurst Lake Provincial Recreation Area	1.5 %

3.6 Model Estimation

From the choice experiment data, three stated preference models, two MNL and one RPL, were estimated with LIMDEP software using maximum likelihood techniques. Every model included the campground attributes, as well as a constant that was specific to the "stay-at-home" alternative, and two of the models contained socio-economic interactions. For the "stay-at-home" alternative, the levels of the attributes were set equal to zero. For the two camping alternatives, each attribute was modeled in discrete levels to provide a way of measuring the effect of changes in these levels on utility.

Qualitative attributes were effects coded rather than dummy coded because the dummy method confounds the effect of the base category with the intercept (Adamowicz, Louviere and Williams 1994; Adamowicz et al. 1997). Effects coding replaces *n* levels of a qualitative variable with *n-1* effects-coded variables, so that a four-level attribute is reduced to three columns in the matrix of explanatory variables and a two-level attribute is reduced to one column. The omitted level, which is arbitrarily chosen, is referred to as the base case and is assigned a value of -1. The utility of the base level is interpreted as the negative sum of the estimated coefficients of the other levels, while the utility of the other levels is taken as their respective coefficients (Adamowicz, Louviere and Williams 1994). In other words, the coefficients of estimated levels are interpreted relative to the base case so that a statistically significant negative coefficient on a level of an attribute, for example, indicates that level confers less utility than the base level. The base levels are shown in Table 3-1.

The random parameters in the RPL model were selected using McFadden and Train's (2000) Lagrange Multiplier test, which provides a statistical basis for accepting or rejecting the null hypothesis that the correct specification is MNL (see Appendix B). The RPL was estimated using 1000 Halton simulations with an unconstrained normal distributional assumption for the random parameters. A panel model was specified to account for the possibility of correlation resulting from multiple observations of choice responses for each sampled individual (Greene 2002; Hensher and Greene 2001)

Four MNL models were estimated with the best-worst data: one each for the best and worst choices, a joint model, and a joint model with socioeconomic variables. The attributes were effects coded, with the attribute 'spending time with family and friends' serving as the base level.

3.7 Policy Assessment

One objective of this study was to determine the economic benefit that could be realized for a proposed new campground and the attributes of this campground that will maximize revenue for the owners, based on a recreation demand model. The aggregate forecasting method developed in section 3.2.1 to estimate the number of individuals in the population choosing any camping alternative was calibrated with actual visitation data for campgrounds in northeastern Alberta to produce a simulation model of recreation behaviour for the region.

The simulation model, which was based on the MNL model with camping attributes only, was used to determine an optimum price, which was then applied to estimate revenue flows under various scenarios of campground attributes, including the paving of Hwy 881, the main access to the campground. The price that maximizes revenue was determined by varying the fee from $0 to $100, holding all other attributes constant. Since the resultant price of $79 greatly exceeded what is feasible for a camping fee, the next highest competitive price was chosen as the input for subsequent forecasts. Expected revenue was estimated for each of minimally-, moderately-, well- and fully-serviced campground scenarios, holding all other attributes constant. Uncertainty was incorporated into these estimates by making 1000 draws from the parameterized normal distributions of the MNL model parameters[10], a procedure that was repeated 100 times. This protocol was followed for each of the fishing, swimming/beach, and privacy/trees attributes to assess the contribution of each toward generating revenue.

The paving of Hwy 881 will increase traffic flow along one of only two Edmonton-Fort McMurray corridors and is anticipated to increase revenue for the new campground by drawing not only multi-night campers but also individuals looking for a place to spend one night in their north- or south-bound journeys. The paved road also provides an opportunity to advertise the campground to motorists passing by, who otherwise would not have known about it, but who may plan to visit the campground in the future. The

[10] These random draws did not take into account the covariance relationship between variables.

total potential benefits of the paving of Hwy 881 are difficult to model. The most appropriate and straightforward method conceived was to simulate the effect of the change in paved distance that would occur between Fort McMurray and the new campground, from approximately 335 km to 225 km[11]. This approach recognizes benefits accruing only to Fort McMurray residents, for whom introduction of the campground is, no doubt, expected to have welfare-enhancing effects due to the limited camping options currently available near their city. In fact, the campground will provide benefits to non-Fort McMurray residents alike, however these benefits could not be captured by the model.

Based on the above scenarios, a revenue-maximizing strategy was devised for the proposed campground, describing the combination of campground attributes that will optimize the campground's share of the regional camping market.

3.8 Summary

This chapter provided a description of the methods that were used to carry out this study. It began with a description of campground choice in a random utility framework and how it leads to the formulation of the MNL model of choice behaviour. This was followed by a discussion of the RPL model and the advantages it offers over MNL, namely the relaxation of some its strict assumptions. The section following described some of the ways in which individual preference data can be combined to make predictions of aggregate behaviour and formulated a particular method appropriate to this study, given some of the limitations imposed by the data. The next section described the design of the survey that forms the basis of the study, including the technical aspects of the choice and best-worst experiments. This was followed by a discussion of pre-testing and data collection methods, along with a breakdown of response rates by survey version and survey location. The subsequent sections discussed the demand model estimation procedures, particularly data coding, and the particulars of the forecasting model, which

[11] Even if Hwy 881 is not paved, it is possible to travel the road to the campground in 225 km; however the road quality is generally poor and unsuitable for many types of vehicles.

forms the basis of the final results and recommendations of this study. The next chapter reports the findings of the demand and forecasting models.

Chapter 4: Results

4.1 Introduction

This chapter provides a description of the sample, reports statistical and qualitative observations related to camping attitudes, and shows the results of the campground choice, best-worst, and forecasting models. Section 4.2 provides household- and individual-level descriptive statistics, section 4.3 reports statistics and observations about respondents' attitudes toward camping, and the last three sections, 4.4 to 4.6, show the results of the empirical and forecast models.

4.2 Descriptive Statistics

With the exception of two households that were from Saskatchewan, the entire sample originates from Alberta, with just under 40 per cent of respondents living in Edmonton. Table 4-1 shows the top five cities of origin of respondents, coinciding with some of the largest population centers in this region. If Fort Saskatchewan, Sherwood Park and St. Albert are considered part of greater Edmonton, then just over 50 per cent of the sample originates from this area. Besides Fort McMurray, which accounts for 12 per cent of the sample, the other 35 per cent of respondents are scattered throughout roughly 45 municipal districts, towns, and villages of Northeastern Alberta.

Table 4-1 Cities of Origin of Survey Respondents

Residence	**Proportion of sample, %** ($n = 258$)
Edmonton	37.6
Fort McMurray	12.0
Fort Saskatchewan	6.2
Sherwood Park	5.8
St. Albert	3.1
Other	35.3
Total	100

Details on basic household and individual socioeconomic statistics are provided in Appendix C. Households range in size from one to six people, with the average size being 3.4 people. On average, households have 0.3 children between 0 to 5 years, 0.4 children between 6 to 10 years, 0.5 children between 11 and 17 years, and 2.2 adults, including children who are 18 years or older. The responses were slightly unbalanced between the sexes, with females accounting for 57.4 per cent of those responding to the survey, however, most of the questions in the survey asked respondents either to report household activities or to answer from the perspective of the household, so gender is not expected to have influenced the responses. Respondents range in age from 16 to 78 years, with the average age being 44.2 years. Education levels range between pre-high school to post-graduate, with the average person having completed technical school or some college education. Respondents' average household income is $80,000 and the median $75,000. However, these are only estimates, since income was collected in categories and since the final category was truncated at $150,000, resulting in underestimation of the average. Thirty-nine per cent of respondents reported having a membership in a hunting or fishing organization and 16 per cent in an environmental or conservation organization other than a natural history or bird watching club.

4.3 Camping Statistics

Respondents were asked a number of questions about their camping trips in the past year and their attitudes toward camping as a leisure activity. This section summarizes these findings, which are presented in more detail in Appendix D.

Participants visited 37 provincial campgrounds and numerous private, municipal, and other non-provincial campgrounds in northeastern Alberta in 2003/2004. On average, households took 4.9 camping trips during this time. Table 4-2 lists the top five provincial camping destinations and the percent of the sample that chose to visit them, for day and overnight trips. All five campgrounds are well-serviced to fully-serviced and offer fishing, a beach, and a minimum overnight camping fee of $17, not including the cost of firewood, which typically costs around $5 for a bundle.

Table 4-2 Top Five Camping Destinations of Survey Respondents

Campground	Proportion of sample visiting, % (*n* = 259)
Long Lake PP	57.9
Beaver Lake PRA	24.3
Cross Lake PP/North Buck Lake PRA (tie)	21.6
Sir Winston Churchill PP	14.7
Gregoire Lake PP	13.5
Private and Other Non-Provincial Campgrounds	32.0

Note: PP = Provincial Park, PRA = Provincial Recreation Area

Households participated in a variety of activities while camping, the most popular ones listed in Table 4-3. Three quarters of households took part in swimming and other beach activities, reflecting the absolute importance of the beach attribute at campgrounds. Beach activity was followed by hiking, fishing, power boating, and wildlife viewing in popularity. Only 4.2 per cent of respondents participated in educational programs such as interpretive events; however such programs are not commonly offered at Northeastern Alberta campgrounds.

Table 4-3 Top Five Camping Activities of Survey Respondents

Camping Activity	Proportion of sample participating, % (*n* = 259)
Swimming/Beach activity	74.8
Hiking	64.5
Fishing	63.3
Wildlife viewing	47.9
Power boating	47.5

Respondents own a variety of camping and related equipment. The most common items are fishing gear (82.2 per cent), followed by binoculars (74.9 per cent), tent (66.8 per cent), camper trailer (59.8 per cent), and power boat (45.9 per cent). Although recreational vehicles came in at seventh place, 39 per cent of respondents reported owning one. Examining the types of recreational equipment owned by households is useful for understanding the types of activities they are most likely to pursue while camping.

Participants were asked to rank their criteria for choosing a camping destination. Overall, the most important criterion was the level of services offered at the campground, which was chosen first or second most important by 56 per cent of respondents. This was followed by the types of leisure opportunities (i.e. hiking, fishing, ATV) available (41 per cent), distance to the campground (43 per cent), the type and quality of scenery around the campground (36 per cent), per night cost of camping (17 per cent), and finally, the road quality (i.e. paved, gravel, dirt) to the campground, which only 9 per cent of respondents chose as their first or second most important criterion.

4.4 Stated Preference Model

Three conditional logit models – two MNL and one RPL – were estimated using maximum likelihood techniques. One MNL model contains only campground attributes in the utility function, the other includes interaction terms to capture observed heterogeneity, and the RPL model was specified to capture unobserved heterogeneity. The results of maximum likelihood estimation of the campground choice data are shown in Table 4-4 as marginal utilities. Rho-squared[12] values, adjusted for degrees of freedom, range from 0.15 for the MNL1 model to 0.22 for the RPL model, which are considered acceptable goodness-of-fit measures. Most of the attributes have t-statistics greater than 1.96 (95 per cent confidence level) and the signs of the utility parameters are as expected.

Across all three models, the negative coefficient on the alternative-specific constant indicates that, all else held constant, respondents receive more utility from camping than staying at home (although this was not significant in the MNL2 model). The models also indicate that fishing, beaches, and well-treed, private campsites provide significant positive utility for respondents. Fully serviced campgrounds are preferred over both minimally and moderately serviced campgrounds (although the latter is only slightly significant in the MNL2 model), however respondents are indifferent between

[12] Rho-squared (ρ^2) is a type of pseudo-R^2 measure of the goodness-of-fit of logit models. Values of ρ^2 between 0.2 and 0.4 indicate extremely good model fits and are equivalent to the 0.7 to 0.9 range in linear models (Louviere et al. 2000).

campgrounds that are well serviced versus fully serviced, as indicated by the insignificance of the *well serviced* attribute.

Table 4-4 Conditional Logit Estimates of the Parameters of Respondents' Indirect Utility Functions Derived from the Stated Choice Data

Attribute	MNL1 (camping attributes) (*n=2072*)	MNL2 (attributes and interactions) (*n=2072*)	RPL (attributes and interactions) (*n=2072*)
None/Stay at home (ASC)	-0.4602 (-2.67) *	-0.1081 (-0.77)	-0.3690 (-2.00) **
Minimally serviced	-0.7458 (-6.56) *	-0.8866 (-6.78) *	-1.1871 (-6.93) *
Moderately serviced	-0.2225 (-2.11) **	-0.1720 (-1.63) ***	-0.2743 (-2.34) **
Well serviced	0.0914 (0.90)	0.0809 (0.79)	0.0908 (0.81)
Fishing	0.9113 (11.96) *	0.4975 (5.33) *	0.4869 (4.54) *
Swimming/Beach	1.1071 (14.53) *	0.9034 (10.05) *	1.0483 (9.78) *
Privacy/Trees	0.8651 (11.55) *	0.7940 (10.09) *	0.9938 (10.87) *
Nature tours	-0.0021 (-0.02)	0.0164 (0.16)	0.0538 (0.47)
Cultural events	0.0088 (0.09)	-0.0237 (-0.23)	-0.0177 (-0.15)
Nature and cultural programs	0.0264 (0.26)	-0.0060 (-0.05)	0.0186 (0.12)
Distance from home (10^2 km)	-0.4354 (-16.72) *		
Camping fee per night ($)	-0.0130 (-2.99) *		
Income		0.9375 (16.38) *	11.2603 (16.55) *
Kids under 10*Beach		0.5026 (4.12) *	0.7389 (4.61) *
Powerboat*Fishing		0.8633 (7.15) *	1.3494 (8.51) *
Tent only*Minimum services		0.4904 (1.86) ***	0.4981 (1.45)
Tent only*Privacy/Trees		0.5940 (3.08) *	0.4545 (1.98) **
ATV*Minimally serviced		0.4396 (2.31) **	0.5531 (2.13) **
RV*Both programs		-0.3846 (-2.26) **	-0.3425 (-1.70) ***
No dependents*Nature and cultural programs		0.3815 (2.25) **	0.3652 (1.820) ***
Standard deviations of parameter distributions			
None/Stay at home			1.5148 (12.76) *
Minimally serviced			0.8365 (4.18) *
Well serviced			0.0136 (0.02)
Nature and cultural programs			0.3425 (1.040)
Log-likelihood at convergence	-1936.8	-1898.5	-1771.6
Log likelihood at constants	-2275.8	-2275.8	-2275.8
Adjusted ρ^2	0.146	0.162	0.217

Note: *, **, and *** denote 0.01, 0.05, and 0.10 probability levels.

The coefficients on *distance* and *price* in MNL1 are significant and negative, as expected, signifying the marginal disutility that campers receive from lengthy commutes and high campground prices. Distance has a larger negative elasticity than price: a marginal increase in distance results in a 1 per cent reduction in the probability of going camping,

whereas a marginal price increase is associated with a 0.16 per cent reduction in probability. In models 2 and 3, these attributes are incorporated into an *income* variable, which is positive and significant. It was derived by subtracting the camping fee and travel cost (measured as the distance to the alternative times a factor that converts distance into cost) from respondents' reported income.

Other socioeconomic attributes indicate that respondents who own powerboats have a higher preference for fishing than those who don't own powerboats; ATV owners have a higher preference for minimally serviced campgrounds than non-ATV owners; beaches are more preferred by households that have young children (ten years old or less) than those with older children; and respondents whose only form of camping accommodation is a tent have a higher preference for well-treed, private campsites than respondents that may or may not own tents but who own campers, RVs, and other types of all-weather lodgings. There is some evidence (90 per cent significance in the second MNL model) that tent-only owners also prefer minimally serviced campgrounds compared to respondents who have other types of accommodation.

The attributes associated with unique educational experiences – nature tours, cultural events, and both of these programs – are not significant in any model, indicating that respondents are not responding to these attributes in their camping decisions. The RPL model was specified specifically to explore whether there is variation among respondents' tastes with respect to these attributes. McFadden and Train's Lagrange Multiplier test, which checks for such variation, revealed that the attributes *none/stay at home*, *minimally serviced*, *well serviced*, and *nature and cultural programs* may have heterogeneous preferences over the sample and require a mixing structure (see Appendix B). However, the RPL model in Table 4-4 shows that only the first two of these four variables have significant standard deviations (or indication of heterogeneity). This finding indicates there is variation in the way campers respond to the option to stay at home and in their preferences for minimally serviced campgrounds. There is no significant variability in response to the *well serviced* and *nature and cultural programs* attributes. However, the standard MNL model reveals two interesting results with regard

to the latter: nature and cultural programs are more preferred by respondents with no dependents (children under 18 years) compared to those who have dependents and less preferred by respondents who own RVs compared to those who don't own RVs.

The MNL model with camping attributes only was assessed for the violation of the IIA property using Hausman and McFadden's specification test. The model was estimated with a smaller choice set, by restricting the set of alternatives to choices 2 and 3, resulting in 1359 observations. On the basis of this test (χ^2 = 16.756), the null hypothesis of IIA cannot be rejected at the 95 per cent confidence level. That is, the IIA assumption has not been violated in the MNL model with the removal of the first camping alternative.

4.5 Best-Worst Model

Table 4-5 shows the results of maximum likelihood estimation of the best-worst data. The adjusted ρ^2 values of the MNL models, which range from 0.36 to 0.39, indicate extremely good model fits and every attribute is significant at the 99 per cent confidence level, with the exception of *age*knowledge*, which is significant at 90 per cent. The attribute *spending time with family and friends* serves as the base level to which all utility parameters compare and the results indicate that all of the camping motivations examined confer less utility than this attribute, for the aggregate sample. However when the sample is segmented by respondents' age and the demographic profile of their children, a different preference structure emerges. It shows that older respondents and those who do not have dependents are more motivated by visiting places they have never been and by challenging their outdoor skills than by spending time with family and friends. Compared to the aggregate sample, older respondents are also more motivated by opportunities to learn about nature, while those without dependents are more motivated by the opportunities for relaxation that camping provides.

Table 4-5 Conditional Logit Estimates Derived from the Best-Worst Data

Attribute	MNL Model of Best Choice *(n = 1694)*	MNL Model of Worst Choice *(n = 1694)*	MNL Model of Best-Worst Pair *(n = 3388)*	Best-Worst Pair with Interactions *(n = 3388)*
Unique	-2.9559 (-19.86)	-3.5101 (-12.35)	-3.0926 (-27.86)	-3.0589 (-26.77)
Never been	-2.5421 (-18.38)	-3.0620 (-11.13)	-2.6651 (-24.75)	-3.2936 (-20.49)
Escape	-1.2479 (-10.91)	-1.8131 (-6.29)	-1.3218 (-12.95)	-1.3049 (-12.28)
Relax	-0.9961 (-9.20)	-1.5466 (-5.01)	-1.0572 (-10.48)	-1.2039 (-10.94)
Challenge	-3.7362 (-21.77)	-4.4480 (-17.73)	-4.0052 (-33.81)	-4.3067 (-32.04)
Knowledge	-4.0041 (-18.76)	-3.9191 (-13.942)	-3.5914 (-31.48)	-4.3018 (-22.86)
Age*Never been				0.0135 (3.54)
Age*Challenge				0.0095 (2.78)
Age*Knowledge				0.0069 (1.67)
Nodep*Never been				0.4495 (2.98)
Nodep*Challenge				0.4686 (2.61)
Nodep*Relax				0.5761 (4.62)
LL at convergence	-1122.2	-1190.9	-2320.3	-2294.6
LL at constants	-1847.1	-1860.7	-3713.8	-3713.8
Adjusted ρ^2	0.391	0.359	0.375	0.381

It is noteworthy that in the model with interactions, the utility parameters are very similar for groups of attributes that were chosen to represent roughly identical camping motivations. For instance, the attributes *escape* and *relax*, which represent the motive to 'get away from it all,' both have utility parameters around -1.2; *unique* and *never been*, which represent the desire to 'discover new places,' have parameters around -3.1, and *challenge* and *knowledge*, roughly representing the desire for 'personal improvement,' both have parameters of -4.3.

Table 4-6 ranks the motivational attributes of respondents. For the entire sample, the most important camping benefit is spending time with family and friends followed by relaxing mentally and physically, escaping the hustle and bustle of daily life, traveling to a place one has never been, visiting places that have unique attractions, challenging one's outdoor skills, and increasing one's knowledge about nature. If the sample is segmented, the three most important benefits for respondents with no dependents are relaxing, followed by challenging one's skills, and traveling to a new place; while for older

respondents, it is traveling to a new place, followed by challenging one's skills, and learning.

Table 4-6 Ranked Attributes of the Best-Worst Data

Rank	MNL Model of Best Choice *(n = 1694)*	MNL Model of Worst Choice *(n = 1694)*	MNL Model of Best-Worst Pair *(n = 3388)*	Best-Worst Pair with Interactions *(n = 3388)*	
				Nodep	Age
1	Family/friends	Family/friends	Family/friends	Relax	Never been
2	Relax	Relax	Relax	Challenge	Challenge
3	Escape	Escape	Escape	Never been	Knowledge
4	Never been	Never been	Never been	Family/friends	Family/friends
5	Unique	Unique	Unique	Escape	Relax
6	Challenge	Knowledge	Knowledge	Unique	Escape
7	Knowledge	Challenge	Challenge	Knowledge	Unique

The MNL models of the Best-Worst pair and the Best-Worst pair with interactions were assessed for the violation of the IIA property using Hausman and McFadden's specification test. The models were estimated without the first alternative, resulting in 2353 observations. On the basis of the test (χ^2 = 10.95 and 18.30, respectively), the null hypothesis of IIA cannot be rejected at the 95 per cent confidence level. The IIA assumption has not been violated in these models with the removal of the first best-worst alternative.

4.6 Forecasting Model

The MNL1 model of campground attributes was used to develop a model of recreational camping behaviour in northeastern Alberta. The model consisted of 20 existing campgrounds and campground clusters,[13] and 10 cities and areas of origin, to represent the residences of respondents in the sample. Even though there are many more campgrounds on the landscape, it was not important to include similar campgrounds which are in close proximity, since a key attribute driving the model is *distance*, which is unique for every city and campground combination. Also, despite the fact that

[13] The model included mostly provincial campgrounds, since visitation data for private, municipal, and other non-provincial campgrounds was limited.

respondents represented close to 55 cities, it was not practical to include cities from which less than about 3 per cent of the sample originates and which were too far away from other cities to be clustered. Lists of the cities and campgrounds used to construct the model, as well as the distances between them, can be found in Appendix E.

A table of probabilities of visiting any campground from any city in the model was constructed to predict visitation (number of camping nights) to the campgrounds. Visits were calculated by taking the sum of the average number of visits to the campgrounds in the model[14] and weighting them by the ten cities represented in the model according to the share of respondents representing each city. Then, each city's share of trips was distributed amongst campgrounds, according to the appropriate probabilities.

To improve its predictive capability, the forecasting model was calibrated by the addition of a constant to the utility expression for each campground. The constants were determined with Excel's Solver function, with the objective of minimizing the sum of squared differences of actual versus predicted visits, subject to the constraint that the differences could not exceed the standard deviation of actual visits from 1993 to 2002. This technique resulted in more precise visitation forecasts, such that the highest maximum difference between predicted and actual visits was 75 camping nights and all differences were well below the standard deviations. The calibration constants are found in Table E-2 in the Appendix.

Once the forecasting model was calibrated, a new probability table was constructed that included the proposed new campground in the set of camping alternatives, with the following attributes: fully serviced with fishing, beaches, and private campsites (Oostendorp 1999), and a price of $23 per night. The effect of the introduction was to reduce visitation at existing campgrounds in the region by anywhere from 5.1 to 5.6 per cent. Visitation to the new campground was determined using the best available data for visitation to *all* campgrounds in the region (not just the campgrounds in the forecasting

[14] Provincial visitation data were available for the years 1993 to 2002; this data can be found in Appendix E, Table E-4.

model) and revenue was determined by multiplying the number of camping nights by price. Table 4-7 shows the changes in visitation to regional campgrounds resulting from the introduction of the proposed resort. Due to its desirable qualities and location, very strong visitation rates are indicated for the proposed resort, relative to popular campgrounds in the region.

Table 4-7 Current Annual Visits and Predicted Visitation with the Proposed Resort to Campgrounds Representing Survey Respondents' Top Six Camping Destinations in 2004

Campground	Annual Visits (Camping Nights)	
	Current	With Proposed Resort
Long Lake	12,986	12,189
Gregoire Lake	6,750	5,356
North Buck Lake	3,616	3,372
Cross Lake	3,598	3,398
Sir Winston Churchill	3,526	3,289
Beaver Lake	2,751	2,559
Proposed Resort	n/a	4,124

Given the predicted visits to the proposed resort, annual revenue ranges from $5,390 for an overnight fee of $1 to $100,592 for a fee of $25. Revenue accruing to the new campground owners is maximized at an overnight fee of $79, which would generate $161,952 in income, but this is not a feasible overnight camping fee in northeastern Alberta. This revenue-maximizing price is an extrapolation outside of the range of existing fees. Typically, prices in this region range from $15 to $24 per night, including the cost of firewood, which, when not part of the overnight fee, is usually sold for $5 per bundle. For the purpose of further analysis, an overnight fee of $23 was deemed to be a competitive price for the proposed campground since it is new and offers many amenities favored by recreational campers, but is farther from most major cities than campgrounds charging $24 per night.

Figure 4-1 shows the expected revenues for the proposed campground with the provision of a beach, fishing opportunities, and well-treed, private campsites, under various

assumptions about campground services. Uncertainty was incorporated into these estimates by making 1000 draws from the parameterized normal distributions of the MNL model parameters, in 100 draw simulations (considering only the variance matrix). Expected revenue increases with the level of services, up to a well-serviced campground. However, the expected revenue accruing for a fully serviced campground (average=$94,720; SD=$3421; range $80,024 - $108,880) varies much less than for a well serviced campground (average=$103,661; SD=$10,594; range $63,053 - $158,024). Recalling that respondents are indifferent between well-serviced and fully serviced campgrounds and that the coefficient on the former was not significant helps to explain the higher confidence associated with the revenue estimate for a campground that is fully serviced. The expected revenues for minimally serviced and well-serviced campgrounds are, respectively, $46,544 (SD=$5,446; range $27,702 - $73,316) and $76,861(SD=$6,430; range $62,368 - $108,824).

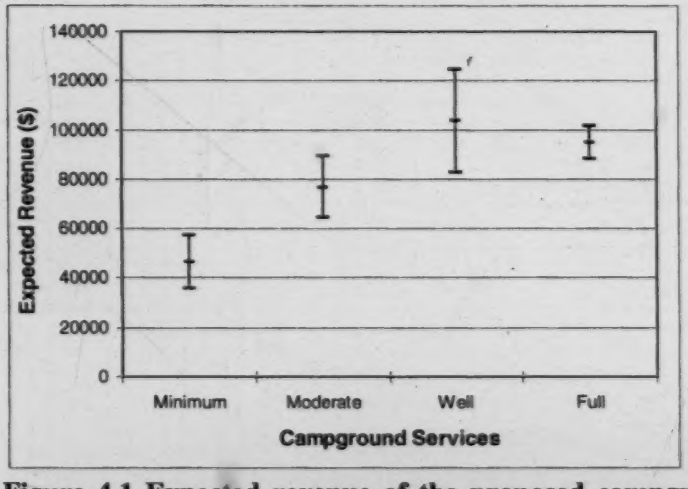

Figure 4.1 Expected revenue of the proposed campground given various levels of campground services, and assuming that fishing opportunities, a beach, and well-treed, private campsites are provided. Midpoints represent average revenue and endpoints represent (95 per cent) confidence intervals.

If Hwy 881 is paved, average revenue is expected to increase by roughly 6 per cent, or anywhere from $3,000 to $6,000 annually, depending on the level of services offered. The paving was modeled as a reduction in the distance between Fort McMurray and the campground from 335 km to 225 km. Table 4-8 shows the effect of the paving on

visitation rates to popular campgrounds in the region and Figure 4-2 depicts the resulting expected revenues that could be realized by the proposed resort under four types of services, given the same assumptions about the campground's attributes as above. The observed trends are the same as in the previous scenario, but at higher revenues. The expected revenue for a minimal, moderate, well, and full service campground is now $49,371, $81,448, $109,770, and $100,280, respectively.

Table 4-8 Current Annual Visits, Predicted Visitation with the Proposed Resort, and Predicted Visitation with the Paving of Hwy 881 to Campgrounds Representing Survey Respondents' Top Six Camping Destinations in 2004

Campground	Annual Visits (Camping Nights)		
	Current	With Proposed Resort	With Paving of Hwy 881
Long Lake	12,986	12,189	12,162
Gregoire Lake	6,750	5,356	5,276
North Buck Lake	3,616	3,372	3,365
Cross Lake	3,598	3,398	3,393
Sir Winston Churchill	3,526	3,289	3,279
Beaver Lake	2,751	2,559	2,552
Proposed Resort	n/a	4,124	4,367

Figure 4-3 shows the revenues that are expected, under the assumption that Hwy 881 is paved, in the absence of fishing opportunities, a beach, and well-treed, private campsites, each considered independently. Without the provision of these attributes, expected revenues fall, respectively, to $41,911, $34,587, and $43,756, compared to annual revenues of $100,000 when all three attributes are present. It is clear that lack of a beach and swimming area results in the greatest loss of revenue, followed by no fishing and poorly treed, open campsites. Overall, the strongest determinants of revenue flows are the above attributes and the level of services offered.

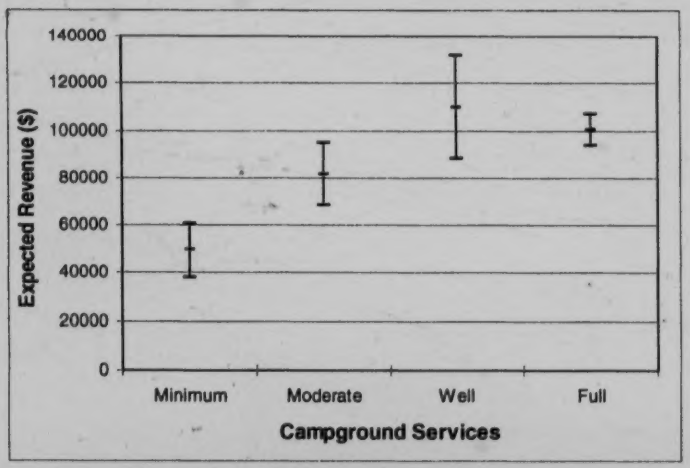

Figure 4.2 Expected revenue of the proposed campground for various campground services if Hwy 881 is paved, and assuming that fishing opportunities, a beach, and well-treed, private campsites are provided. Midpoints represent average revenue and endpoints represent (95 per cent) confidence intervals.

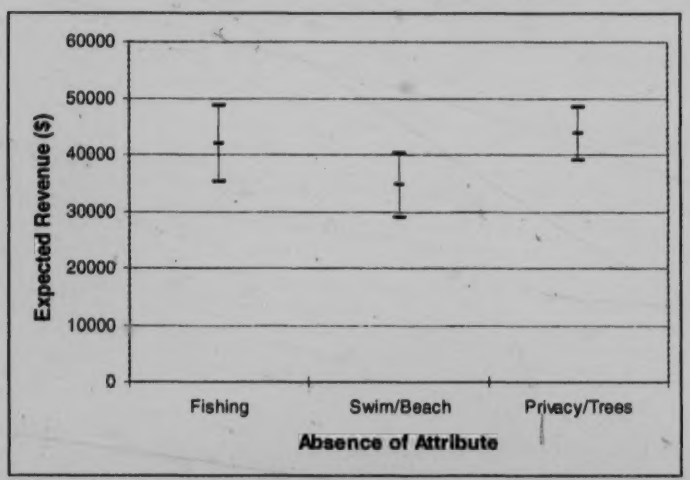

Figure 4.3 Expected revenue of the proposed campground if Hwy 881 is paved but in the absence of fishing, a beach, and well-treed, private campsites, considered independently. Midpoints represent average revenue and endpoints represent (95 per cent) confidence intervals.

4.7 Summary

This chapter provided a description of the survey sample, summarized some of the statistical and qualitative observations related to camping attitudes, and reported the results of the campground choice, best-worst, and forecasting models. There are three major findings stemming from the examination of northeastern Alberta campers' preferences. The first is that this group is largely indifferent toward educational programs and services while camping, showing strong preferences, instead, for basic amenities such as fishing opportunities, beaches, well-treed, private campsites, and highly serviced camping facilities. The only exception is the group of respondents that have no dependents, who prefer campgrounds with nature and cultural programs. The second finding is that respondents' main motivations for camping are to relax and spend time with family and friends, the only caveat being older respondents and those without dependents, who, together, prefer the discovery and challenge benefits that camping provides and, respectively, its opportunities for education and relaxation. The third major finding is that, owing to its favourable qualities and location, the First Nation's proposed resort can expect to attract a sizable share of the region's camping market if built according to campers' preferences, independent of the provision of cultural services. The upcoming chapter provides a discursive overview of these results and discusses their implications for the economic feasibility of the proposed resort.

Chapter 5: Discussion and Conclusion

5.1 Introduction

The goal of this research was to assess the demand for cultural components of recreational camping in northeastern Alberta and to investigate the compatibility of tourism, as a development strategy, with the economic sustainability of the Heart Lake First Nation. A survey of northeastern Alberta campers was undertaken in the summer of 2004, consisting of field interviews and mail-out questionnaires. The heart of the survey consisted of an attribute-based stated choice experiment designed to analyze the demand for various aspects of recreation. The demand for a cultural component was examined which, to our knowledge, has not yet been done in this framework. The resulting demand analysis was combined with data on current visitation to create a calibrated simulation model of visits for the region. The model was used to forecast visitation to the First Nation's proposed resort and assess economic feasibility under a variety of supply and demand scenarios.

5.2 Overview of Findings

Examination of northeastern Alberta recreational tourists' preferences for various camping attributes has given rise to three major findings. The first finding is that this group is generally unresponsive to educational programs and services while camping, showing strong preferences, instead, for basic amenities such as fishing opportunities, beaches, well-treed, private campsites, and highly serviced camping facilities. The only exception is the group of respondents that have no dependents (children under 18), who have significant preferences for campgrounds with nature and cultural programs. The second finding is that respondents' main motivations for camping are to relax and spend time with family and friends, the only caveat being older respondents and those without dependents, who have a different preference ordering of camping benefits. The third major finding is that, independent of the provision of cultural services, the First Nation's proposed resort can expect to attract a relatively large share of the region's camping

market if built according to the demands of campers, owing to its favourable qualities and location.

5.2.1 Demand for Camping Attributes and Campers' Motivations

Analysis of the survey responses paints a picture of the average camper as a relatively wealthy city-dweller in his/her mid-40s who likes to camp in comfort and who appreciates activities that can be enjoyed with family and friends, such as fishing and relaxing on the beach.

Many of the results revealed by the choice experiment are substantiated by the qualitative responses provided by campers. The choice experiment shows that respondents prefer highly serviced camping facilities, which is supported by the fact that respondents' top five visited campsites in 2004 were all well- to fully-serviced facilities, and 56 per cent of campers designated the level of campground services to their top two criteria when choosing a camping destination. In addition, 60 per cent of respondents own a camper and 39 per cent own a recreational vehicle (RV), indicating the level of comfort they prefer while camping. Respondents also value beaches and fishing quite highly. In fact, beach activity was the number one activity pursued by respondents in 2004, with a 75 per cent participation rate. Fishing was the third most engaged-in activity, with a 63 per cent participation rate and fishing gear is the most commonly owned camping equipment among respondents. Fishing and boating go together so, not surprisingly, boating also made the list of top five camping activities in 2004 and 46 per cent of respondents own powerboats.

A key finding from the choice experiment is that recreational campers in northern Alberta are not interested in learning-based activities such as Aboriginal cultural programs and nature tours. This is supported by the finding that only 4.2 per cent of respondents participated in educational programs such as interpretive events in 2004; however such programs are not commonly offered at Northeastern Alberta campgrounds. It was surprising to find that respondents who own RVs, in particular, prefer campgrounds

without learning-based programs. This may be explained by the fact that many RVs today are equipped with televisions, VCRs, and other devices that entertain, so parents are less likely to seek out campground activities to keep their children occupied. The finding of a lack of interest in intellectually motivated activities, including Aboriginal culture, supports previous studies involving domestic tourist surveys (Ryan 2002; Ryan and Huyton 2000a; Ryan and Huyton 2000b; Ryan and Huyton 2002).

Ryan (2002) and Ryan and Huyton (2000a; 2000b), however, identify a small minority of "active information seekers" who are attracted by Aboriginal tourism and who also have an interest in the natural environment and in other activities based on knowledge seeking. Sofield and Birtles (1996) also indicate that culture and nature attractions are preferred together. In this study, people without dependents (children under 18) fit these criteria, as they prefer to stay at campgrounds having both nature and cultural programs. Much of the literature on indigenous cultural tourism has attempted to segment tourists according to certain demographics that are considered more likely to be interested in cultural products (McIntosh 2004; McKercher and DuCros 2002; Scheyvens 2002), including mature and well-educated groups (Grekin and Milne 1996, PwC Consulting 2002). Given these previous findings, older and more educated respondents were also expected to have significant preferences for cultural programs. It is true that people without dependents are usually older; however age was not a factor in this study, which makes it difficult to untangle what it is, exactly, about people without young children that make them different from older respondents. Perhaps they represent the population of baby boomers who have no children to look after and who are seeking meaningful activities to occupy their time.

The analysis of camping motivations captured by the best-worst experiment supports the findings of the choice experiment. It indicates that attractions meeting the intellectual motive for recreation are not as important as those that meet the motive for relaxing with family and friends. This finding also parallels Ryan and Huyton's (2002) results, which indicate that attractions meeting the intellectual motive for travel are unimportant among the majority of domestic leisure travelers. In the present study there were two caveats:

older respondents and those without dependents, together, are motivated foremost by discovery and challenge and, respectively, by the educational and relaxation benefits of camping. These motivations may make them more likely to appreciate cultural attractions. It is noteworthy that the demographic of older individuals in Alberta is expected to increase in the coming years. Thus, from the choice and the best-worst experiments, it can be said that respondents who do not have young children and those who are older have slightly different preferences from the rest of respondents.

5.2.2 Economic Feasibility of Proposed Resort

The economic feasibility of the proposed resort depends on the availability of development financing, market feasibility, and long-term profitability, among other factors. This study specifically examined the market feasibility of the resort by investigating the demand for additional campgrounds in the region and, specifically, for cultural attributes of camping, to assess whether a unique market for such products exists. The purpose of this market feasibility study, then, was to develop a revenue-maximizing strategy for the resort based on its characteristics.

According to the demand analysis of camping attributes, there is currently not enough demand for Aboriginal cultural attributes at campgrounds in northeastern Alberta to warrant investment in such products. However, according to the forecasting model developed from the demand analysis, if the proposed resort is built according to campers' preferences, it can expect to attract a good share of the region's camping market, regardless of its ability to capitalize on an Aboriginal cultural products market. The community's business plan describes a type of resort development that is, for the most part, compatible with the camping preferences uncovered in this study, which depict a strong affinity for highly serviced camping facilities, fishing opportunities, beaches, and well-treed/private campsites. Level of services, which include everything from power, water, and sewer installations to maintenance and patrol, are the most important determinant of the per night cost of a campground. From informal conversation with campers in the field, it was clear that there is high demand (and not enough supply) for

these specialized types of services and many people, especially those with campers and RVs, are willing to pay for them. In northeastern Alberta, the cost of a highly serviced campground typically ranges from $17 to $24 per night, including the cost of firewood. Other important determinants of cost are campground size and location. If the Heart Lake community is prepared to offer the types of services that matter to campers then, due to the favourable location of its proposed resort, the community can likely charge a revenue-maximizing price of $23 per night, including the cost of firewood, which is comparable to similar campgrounds in its vicinity.

At a revenue-maximizing price of $23 and with full services, fishing, a beach, and private campsites, very strong visitation rates are indicated relative to other campgrounds in the region. The forecasting model predicts approximately 4,100 annual visitor nights to the resort, which would place it in the ranks of the top five most visited campgrounds in northeastern Alberta. At this rate, the community can expect revenues of roughly $100,000 annually. The paving of Hwy 881 is forecasted to increase visits by roughly 240 camping nights and raise revenues by an additional $5,000 annually, although this is a conservative estimate. Assuming that Hwy 881 is paved, if the community does not provide fishing opportunities, a beach, or well-treed, private campsites, expected revenues will fall, respectively, to $41,911, $34,587, and $43,756, making it clear that lack of a beach and swimming area results in the greatest loss of revenue, followed by no fishing and poorly treed, open campsites. Thus, the highest revenue potential for the resort is obtained from the provision of a beach, fishing opportunities, attractive, private campsites, and a high level of services – especially modern conveniences such as water and power – safety, and overall maintenance of the campground. If these elements are supplied, the resort is expected to have very good market potential.

5.3 Tourism as a Development Strategy

Despite the high revenue potential of the resort, market feasibility, alone, will not ensure a successful tourism development initiative. As stated, economic feasibility also depends on the ability to secure financial capital and to manage the tourism project profitably.

These factors, in turn, depend on the institutional and cultural characteristics of a community, especially its ability to create a favourable investment environment and to separate politics from daily business affairs (Cornell and Kalt 1992). Empirical analysis of unemployment, poverty, and growth rates on Aboriginal communities in the US indicates that poverty is primarily a problem of political institutions, rather than economics per se (Cornell and Kalt 1992, Jorgensen and Taylor 2000). New theories of growth have also validated the important role played by institutions, citing governance, trust, and cooperation as decisive factors in development outcomes (Vázquez-Barquero 2002), and culture has been advocated by institutional economics as a key element of development, since it shapes and legitimizes institutions (Clague 1997; Lavoie and Chamlee-Wright 2000).

It has been said that culturally appropriate economic development is the most important goal of planning for development (Cornell and Kalt 1992; Guyette 1996). With the guidance and support of cultural norms, community leaders are in a better position to make economic decisions, such as identifying activities that best fit with the community's notions of what is appropriate (Cornell and Kalt 1992). For example, a leadership that is interested in tourism as a development strategy must have the support of a community that is willing to experience some commercialization of its culture, exposure to other cultural values, and perhaps a disruption of community life by outsiders, or face internal divisiveness and discontent (Cornell and Kalt 1992; Notzke 1998; White 1993). Culture forms the link between formal institutions of governance and the shared beliefs of a community about what type of governance is acceptable.

The role of institutions is to confer legitimacy to community decisions and promote their efficient implementation, creating a favorable environment for economic investment and opportunity (Cornell and Kalt 1992). According to Cornell and Kalt (1992), creating an environment in which investors feel secure and willing to contribute resources into the community economy depends on the separation and limitation of powers and the separation of electoral politics from the daily management of business affairs. Further, while it is considered acceptable for Aboriginal governments to take part in strategic

long-term business decisions, successful enterprises are typically distinguished by the separation of government from the day-to-day affairs of tribal businesses. This may be more difficult to implement in a tribal enterprise economy – in which tribes manage the development of their own resources and effectively operate as a tribe-as-corporation – but is still possible through the establishment of independent committees to manage businesses or through other formal or informal mechanisms that discourage rent-seeking behaviour (Cornell and Kalt 1992).

Thus, a community's choice of development strategy may be constrained from within by its institutions of governance, asset endowments and cultural attributes, or from without by market opportunities and financial capital inflows. Communities usually have a high degree of control over governing institutions and the type of development activity to pursue; moderate degree of control over access to capital, human capital, and culture; and low degree of control over market opportunities, distance from markets and natural resource endowments (Cornell and Kalt 1992). The factors that are farthest from the Heart Lake community's control are not limiting: it has abundant natural resources for forest-based resort development and this study has demonstrated the availability of a market for its tourism product. Likely the biggest challenge facing the community is to attract development financing; yet even this constraint can be improved by formulating a strong business plan and by demonstrating to investors the profit potential of the resort. The challenge also exists to examine the compatibility of resort development with the cultural goals of the community and, should this requirement be met, to cultivate the existing and necessary strengths of the community to help it promote its own success, according to its own definition of what that may be (Lavoie and Chamlee-Wright 2000).

5.4 Contribution

Previous academic research linking the supply and demand aspects of Aboriginal cultural products has identified many gaps in this literature. There is a consensus about the need for market research to help clarify visitor demands in the search for commercial market opportunities (Hughes 1995; McIntosh 2004; Sinclair 1998). There is also agreement that

much of the literature on indigenous peoples and tourism has not identified the links between cultural products and domestic demand (Ryan 2002). Aboriginal tourism in Canada is promoted by the tourism industry for its billion dollar potential, yet there has been very little attention paid by governments and the industry to the economic feasibility of Aboriginal tourism in specific contexts and with accountability for the domestic tourist market. Existing Canadian studies of market potential are quite general, since they use national macroeconomic data and indicators as their basis, which limits their applicability toward market feasibility assessment in local contexts. There are many types of Aboriginal tourism and Aboriginal cultural products, which may not be equally appealing to tourists interested in (Aboriginal) culture; yet existing industry studies assume that Aboriginal cultural tourists are indifferent between various types of products. Ryan and Huyton (2002) point to a gap between the promotional efforts directed at Aboriginal tourism and the reality of tourist interest, arguing that both the Aboriginal perspective and the voice of the tourist have been ignored. To this end, the contribution of this research is to provide a context-specific assessment of the market potential of Aboriginal tourism for a particular region in Canada, among a particular population of tourists. In doing so, it provides insights into the nature of domestic demand, which is often overlooked, and reveals that Aboriginal tourism potential may be highly variable across the country, depending on the context in which it is provided and the market that is available to consume it.

This research contributes to the literature on cultural tourism and recreation demand by demonstrating the application of quantitative approaches to assess a) the demand for Aboriginal cultural products in a particular region and b) the motivations of tourists for a particular activity through which Aboriginal products can be consumed. The study provides economic insights into the tradeoffs that domestic northeastern Alberta tourists are willing to make regarding attributes of recreation sites, including cultural tourism opportunities, and the benefits that they seek from recreational camping experiences.

The research also contributes to the development plans of the Heart Lake community, which is hoping to capitalize on a unique market opportunity by providing cultural

services at its proposed recreational facility. This study was intended to assist the community in deciding whether to pursue such an enterprise, and whether it should contain cultural elements. The economic analysis undertaken in this study is limited in scope and cannot, by itself, determine whether a particular development is desirable, but in helping the community of Heart Lake to understand some of the economic trade-offs associated with tourism, in terms of illustrating foregone revenues, it may help in weighing some of the costs and benefits associated with this particular development activity. The findings of this study indicate that the northeastern Alberta camping market will not pay a premium for the provision of cultural services at campgrounds. The significance of this finding is that if Aboriginal People act on the assumption that these visitors have an interest in their culture, and this is not the case, their aspirations may be defeated, making it more difficult to undertake future activities that affirm their cultural values (Ryan and Huyton 2000a). This is because Aboriginal People may regard cultural tourism as a way of celebrating their cultural heritage and legitimizing their social aspirations, whereas tourists regard the cultural tourism product on offer as "little more than a subset of recreational choice to be accepted or rejected as the case might be (Ryan 2002, p. 957)." Thus, market research can have important implications for any new business and this study makes a valuable contribution in that regard.

5.5 Limitations

The limitations of this study relate to the methods used to collect data, to estimate the recreation demand model, and to forecast revenues for the proposed resort. One of the major concerns arising from data collection is that surveying took place at campgrounds, which excluded non-campers at any given time and place from participating in the study. An important caveat in this regard is that, since educational experiences are not commonly offered at northeastern Alberta campgrounds, it is possible that the demand model may have underestimated public interest in nature and Aboriginal cultural attractions by excluding interested individuals who choose not to camp in northeastern Alberta, or who camp less frequently, due to a lack of these services. In addition, at any given campground, on any given sampling occasion, the goal was to interview as many

households as possible, as opposed to randomly selecting participants to be interviewed, in order to optimize time and budget resources. This is also the reason why most of the sampling took place on weekends. Furthermore, surveying only took place at select provincial campgrounds in northeastern Alberta, specifically, the most popular sites – which also happen to be highly serviced – where the probability of encountering campers is highest. The combination of the above factors may mean that the survey sample is not representative of the entire population of northeastern Alberta campers. Specifically, the sample may over-represent wealthier campers who prefer highly serviced camping facilities. However, the purpose of the study was to assess the ability of the northeastern Alberta camping market to absorb additional camping facilities, so it is not necessarily a detriment to the study if the group of campers that comprises the majority of this market (i.e. those who prefer highly serviced facilities) is targeted for sampling. In addition, the logistics and costs involved with conducting a survey make perfectly random survey administration impractical in many situations. Intercept surveying is generally considered acceptable for populations that are widely dispersed and not easy to identify, and in cases where individuals are being asked to respond to a relatively complex questionnaire (Champ 2003). Thus, most studies with these characteristics are limited to the purposive sampling techniques used in this study.

There are a few important caveats associated with model estimation, including the hypothetical nature of the survey data and the complexity of the survey instrument. The hypothetical setting in which stated choice data are elicited can be problematic if respondents do not understand the task they are being asked to carry out and/or if they are not committed to completing it (Louviere, Hensher and Swait 2000). This may explain why a small portion of the surveys was not fully completed by respondents. So-called hypothetical bias or item non-response can occur as a result of hypothetical scenarios that lack realism; excessive cognitive burden placed on respondents due to a combination of survey length and complexity (Bennett and Blamey 2001); or, simply, tediousness that may be brought on by repetitive tasks. However, these factors are considered only minor issues in this study, since respondents were only asked to complete 8 choice tasks – when most surveys typically involve 16 – and because surveyed individuals were anticipated to

already have some familiarity with the tradeoffs associated with recreation decisions. In addition, every effort was made to construct the hypothetical scenarios – that is, the campground attributes – to represent the available attributes at existing sites. However, the possibility of the omission of important attributes (and possibly the presence of irrelevant ones) is not dismissed, as it is highly probable that not all respondents afford the same degree of relevance to the seven camping attributes presented in the survey when it comes to actual camping decisions, due to differences in tastes. This is an important caveat because it reflects the inherent tradeoffs between survey realism and richness of information extracted from respondents, on the one hand, and survey length, complexity, and cognitive burden placed on respondents, on the other. In addition, the construction of the campground attributes presented a real challenge in terms of harmonizing the choice-relevant attributes appropriate to respondents, with the policy-relevant attributes – such as the cultural element – appropriate to decision makers concerned about Aboriginal-themed resort development. It was particularly difficult to describe the cultural component since it is recognized that respondents may lack familiarity with it, yet that it should not be unduly described or emphasized. Although the cultural element was embedded under the guise of "educational experiences," which are not altogether unfamiliar to campers, it is possible that the purpose of the exercise was not well hidden, which may have led to strategic choice behaviour by respondents (Bennett and Blamey 2001).

The final set of limitations concerns the forecasting model that was used to predict revenues for the proposed resort. First, the model was based on the seven attributes included in the choice experiment which, as already discussed, may not completely capture all of the factors relevant to campground destination choice analysis. Second, the model was based on the MNL model. If it had been based on the RPL model, it may have provided a richer estimate of campground visitation by including, for example, people without dependents who are interested in nature and cultural programs. Thus, the forecasting model may have underestimated the number of visits to the proposed resort. However, use of the RPL model for forecasting would have been very time intensive and does not guarantee an economically significant difference from the MNL model in the

final result. Third, the forecasting model is based on a smaller than desired sample size, which has implications for statistical efficiency and may also have affected survey sampling efficiency since the design of the choice experiment was based on a slightly larger than required design space (64 vs. 32 choice sets). Fourth, the forecasting model is strongly dependent on the properties of the sample, in the sense that predictions were based on the proportion of *respondents* representing the cities of origin rather than the actual number of northeastern Alberta campers representing these cities. Fifth, the model is based on the best available estimate of the number of annual camping nights in northeastern Alberta. Since this estimate does not include visits to private and other non-provincial facilities, it underestimates the number of visitor nights at the proposed resort. Sixth, the forecasting model did not adequately take into account the potential benefits accruing from the paving of Hwy 881, thus it may have underestimated visits to the proposed resort. Seventh, the forecasting model was unable to capture the effect of other potential sources of revenue outlined in the Heart Lake community's business plan, such as, for example, the cabins, conference centre, and mini golf facility, which may have underestimated the forecasted visits and revenue resulting from resort development. Eighth, the forecasting model assumes that northeastern Alberta campers would have full information about the availability of the Heart Lake resort as a camping destination, thus the model's predictions of visitation and revenue are contingent on the successful marketing and promotion of the resort. Ninth, the forecasting model's predictions of visitation do not take into account the potential for congestion and capacity constraints at the Heart Lake resort because the model does not provide information about when these visits will actually take place, only that a given quantity will take place in a given year. Finally, the Heart Lake visitor forecast is only valid for the current quantity, site quality and price of campgrounds – should these change over time, the forecast model would require updating.

5.6 Further Research

Future research could focus on a number of modifications or extension of this study. One way in which a similar study could be modified is to examine other campground

characteristics that may be relevant to destination choice such as a maintenance/safety attribute. A significant portion of variation in visitation rates among northeastern Alberta campgrounds is not explained by the attributes selected for this survey. For example, the campground at Long Lake Provincial Park is one of Alberta's most popular destinations, with total annual visitor nights that are double the next most popular campground in the region. From discussions with campers, possible explanations for the campground's popularity may be the level of maintenance and enforcement services it provides, giving it a quiet, family-oriented appeal, or the friendly rapport that exists between the campground operators and campers, many of whom appear to visit the campground out of patronage. An attribute that captures these variables may improve the explanatory capabilities of the campground demand model. Another possible attribute-related modification is to restructure the variable containing the cultural component so as to describe either different types or various levels of provision of cultural products, as opposed to just one level that may contain too many types of products for respondents to comprehend. Such a modification may prove more instrumental in eliciting preferences for cultural camping attributes.

To incorporate preference heterogeneity into the forecasting model, and perhaps provide a richer explanation of campground choice, a future study like this could use the results of a RPL model, since such a framework would provide information about the effects of socio-economic variables on campground choice, such as income and education, and perhaps make for a richer model of destination behaviour. An additional modification that might be useful is to improve the way in which highway infrastructure development is modeled to better capture revenue-enhancing effects. For instance, the campground attributes could be revised to include a road quality or traffic volume variable.

Another area of extension may be to combine stated preference (SP) data with revealed preference (RP) data of visitation to recreational sites providing Aboriginal cultural services. Since each type of data offers unique advantages, and they share the same underlying theoretical framework – reflecting the same means of choosing recreational sites according to their attributes (Adamowicz, Louviere and Williams 1994) –

combining the two sources may provide a richer context in which to examine recreation site choice (Adamowicz et al. 1997; Hensher, Louviere and Swait 1999). The particular characteristic of RP data that is considered beneficial in combined models is that it provides actual information about recreation choice and therefore has the potential to validate the hypothetically derived information obtained via stated preference approaches.

For the purpose of general inquiry about the level of demand and motivations for Aboriginal tourism and cultural products in Canada, future studies could apply stated choice techniques to examine demand for different types of goods through which cultural products can be consumed, such as lengthier holidays that involve activities other than camping, or the same good but different markets and locations than those examined in this study. These studies, for example, could comprise feasibility analyses for other Aboriginal communities in Canada or industry-sponsored studies. Their results would be useful for providing insights into the nature of demand for Aboriginal cultural products in terms of resolving issues about who is interested in such products, what kind of products comprise tourists' interests, and what are tourists' main motivations for consuming them. For Aboriginal communities interested in providing cultural services, a good understanding of tourists' motivation and behavior is essential to identifying whether attractive tourist market segments exist and, if so, for developing appropriate marketing strategies to attract these segments.

5.7 Conclusion

This research provided a context-specific assessment of the market potential of Aboriginal tourism for a particular region in Canada, among a particular population of tourists. In so doing, it provided insights into the nature of domestic demand and revealed that, despite the high revenue potential of specialized forms of travel, such as Aboriginal cultural tourism, advanced by the tourism industry, markets for Aboriginal products should not be taken for granted. Communities should undertake detailed market research before they embark on specialized tourism ventures. This study improves upon

previous research by illustrating the successful application of stated choice methods to evaluate the demand for Aboriginal cultural products, and the nature of the motivations behind this demand. It raises the possibility of further research in a number of areas in cultural tourism and recreation demand modeling. Finally, by demonstrating the market feasibility of the Heart Lake community's proposed resort through advanced market research methods, it is hoped that the study will assist the community in securing the necessary capital to finance its venture, should it wish to pursue it.

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Appendix A: Survey Instrument, Parts I and II

Camping Options in Northeastern Alberta
Recreation Survey 2004 – Part I

Campground: _____ Date: _____
Interviewer: _____ Time: _____

Before we begin, I would like to emphasize that all the information you provide is strictly confidential and if there is any question you do not wish to answer, we can skip it and move on to the next one.

Interview Begins Here:

1. Are you on summer holidays (i.e. taking time away from work to be on this trip)?
0. Yes 1. No 2. Retired

2. During this trip, how many nights will you stay at this campground? _____ nights

3. Is this the campground where you originally intended to camp?
0. No Where did you intend to camp? _____ 1. Yes

4. What are some of the reasons you chose this campground?

_____

5. How long has it been since your last visit to this campground? ____ years / months / weeks
____ first visit

6. Will you camp at other locations during this trip?
0. No 1. Yes → Do you know where? _____

7. How many camping trips did you take last year in Canada? ____ trips; ____ did not go camping last year

8. Did you participate in an interpretive program or guided tour while camping last year? And if so, how many times? 0. Never 1. 1–2 times 2. 3–4 times 3. More than 5 times

9. Have you ever camped at a private campground in Alberta (a campground that was not provincially or federally managed)? 0. Yes 1. No 2. I don't know

10. In total, how many people are staying at your campsite? _____

11. Who makes up your entire camping party, at this and other sites? (Read out; choose more than one if necessary.) 1. family 2. friends 3. just you 4. other

12. Where are you from? _____

13. Respondent is 0. Male 1. Female

Thank you; this completes the interview. Our study has a second part in which you could participate at a later date. In the second part of our study, we would like to mail out surveys to the people we interviewed. The surveys are intended to provide us with additional information about your camping choices. If you agree to participate, we will send your household one survey, which will take about 20 minutes to complete. I'd like to remind you that if you choose to participate in the survey, **your name and address will be held strictly confidential and will not be associated with the information you provide in the survey**. Would you be willing to participate in the second part of our study at a later time?

0. No (Thank them for their time and leave.)
1. Yes (Thank participant and ask for her/his name and mailing address.)

Name: _____

Address: _____

_____

_____

Respondent's comments:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Camping Options in Northeastern Alberta
Recreation Survey 2004

Thank you for taking the time to complete this survey. The purpose of the survey is to understand people's camping choices in the Northeast region of Alberta. The information you provide will help us determine the need for more campgrounds and recreational services in this region.

Please try to answer all of the questions. If there is any question you cannot answer, leave it blank and move on to the next question.

All the information you provide is strictly confidential. Your name will never appear with your answers. Only a summary of the results will be made public.

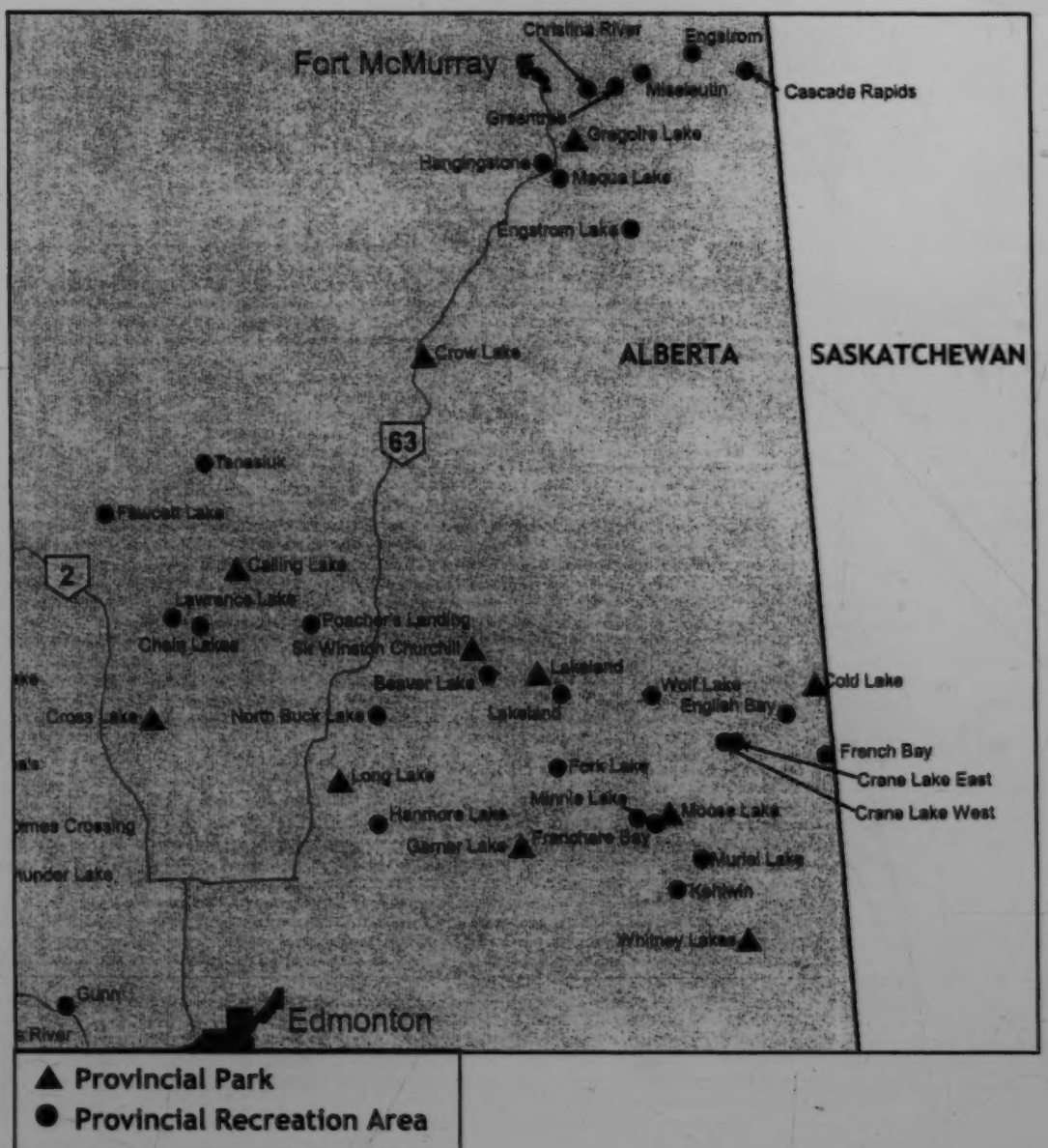
Please return your completed survey in the postage paid envelope provided.

We value and appreciate your help with this project.

Thank you,

Kinga Uto &
Vic Adamowicz

Northeastern Alberta Provincial Campgrounds



Section A - Your Camping Experience

1. On the previous page is a map of some of the provincial parks and recreation areas found in Northeastern Alberta. Please check (✓) the box beside all those that you have visited in the past year (including day trips and overnight trips).

- ❒ Beaver Lake
- ❒ Calling Lake
- ❒ Cascade Rapids
- ❒ Chain Lakes
- ❒ Christina River
- ❒ Cold Lake
- ❒ Crane Lake East
- ❒ Crane Lake West
- ❒ Cross Lake
- ❒ Crow Lake
- ❒ English Bay
- ❒ Engstrom
- ❒ Engstrom Lake
- ❒ Fawcett Lake
- ❒ Fork Lake
- ❒ Franchere Bay
- ❒ French Bay
- ❒ Garner Lake
- ❒ Greentree
- ❒ Gregoire Lake
- ❒ Hangingstone
- ❒ Hanmore Lake
- ❒ Kehiwin
- Lakeland Recreation Area
  - ❒ Touchwood Lake
  - ❒ Pinehurst Lake
  - ❒ Ironwood Lake
  - ❒ Seibert Lake
- ❒ Lakeland Provincial Park
- ❒ Lawrence Lake
- ❒ Long Lake
- ❒ Maqua Lake
- ❒ Minnie Lake
- ❒ Miseieutin
- ❒ Moose Lake
- ❒ Muriel Lake
- ❒ North Buck Lake
- ❒ Poacher's Landing
- ❒ Sir Winston Churchill
- ❒ Tanasiuk
- ❒ Whitney Lakes
- ❒ Wolf Lake

2. If there are Northeastern Alberta campgrounds you visited in the past year that are not listed above (for example, private or municipal campgrounds), please write them down here:

_____

_____

_____

_____

_____

3. In the past year, how often did you go camping (stayed overnight) in Northeastern Alberta (the region shown by the map on the previous page)?

- ❒ Once
- ❒ 2-3 times
- ❒ 4-5 times
- ❒ 5-10 times
- ❒ > 10 times

4. Which are the top five Northeastern Alberta campgrounds - provincial, municipal, and private - where you went camping in the past year, in decreasing order of visits?

(Most Visited) 1. _____

2. _____

3. _____

4. _____

(Least Visited) 5. _____

5. In which of the following activities did you participate in the past year, while camping in Northeastern Alberta? (Please check (✓) all the boxes that apply.)

- ❒ Bird watching (with binoculars)
- ❒ Wildlife viewing
- ❒ Canoeing/kayaking/rafting/sailing
- ❒ Swimming/beach activity
- ❒ Using summer off-highway vehicles
- ❒ Using winter off-highway vehicles
- ❒ Cross-country/downhill skiing
- ❒ Sightseeing in natural areas
- ❒ Attending educational/interpretive programs
- ❒ Fishing
- ❒ Power boating
- ❒ Hiking
- ❒ Mountain biking
- ❒ Hunting
- ❒ Photographing nature
- ❒ Horseback riding
- ❒ Water skiing

6. Please rank the following reasons for choosing a camping destination from 1 to 6. A ranking of 1 indicates the **most important** reason and a ranking of **6** indicates the **least important** reason. Base your rankings on a camping trip with a length of 2 to 3 nights.

Please use each number from 1 to 6 only once.

___ Distance from your home to the campground

___ Types of leisure opportunities available (i.e. hiking, fishing, interpretive programs, ATVs)

___ Type (quality) of roads to the campground (i.e. paved, gravel, dirt)

___ Cost of camping per night

___ Type and quality of scenery around the campground

___ Level of services offered at the campground (i.e. rugged camping, electrical hookups, etc.)

Section B - Your Choice of Camping Area

In this section, we would like to know the choices you would make when faced with different camping options. The following eight situations describe hypothetical campgrounds. For **each situation**, imagine that your family or household is planning the **next camping trip to Northeastern Alberta with a length of 2 to 3 nights** and that you must choose whether you want to go to **"Campground A" or "Campground B" or not go camping at all.** Only Campgrounds A and B can be considered, as all other campgrounds are unavailable. As a family or household, indicate which option you would choose by checking (✓) the box under it.

IMPORTANT: Before starting this exercise, please read and familiarize yourself with the List of 7 Campground Characteristics, found on this page and the next. These are the characteristics that are used to describe the hypothetical campgrounds. You can also find these characteristics in the pullout page labeled **List of 7 Campground Characteristics**, for easy reference while you complete the exercise.

List of 7 Campground Characteristics

1. Level of Services:

Camping Facilities:	Minimally Serviced	Moderately Serviced	Well Serviced	Fully Serviced
• pit toilets	✓	✓	✓	
• fire pits • picnic tables • water pumps • boat launch and dock		✓	✓	✓
• flushing toilets and showers • electrical hookups • playground • canoe/boat rentals			✓	✓
• laundry facilities • sewage dump station • convenience store • mini golf • cabins				✓

List of 7 Campground Characteristics Continued...

2. Fishing

Yes: There are fishing opportunities
No: There are no fishing opportunities

3. Swimming/Beach

Yes: Campground has a sandy beach for swimming and other activities
No: Campground does not have a beach

4. Privacy/Trees

Private: Individual campsites are at least 10 meters apart and divided by trees so that it is not possible to see into neighbouring sites
Open: Individual campsites are less than 5 meters apart and there are few or no trees between them so that it is possible to see into neighbouring sites

5. Unique Educational Experiences

Nature Tours: There are interpretive trails about the area's natural environment and excellent wildlife watching opportunities; you can go hiking and canoeing with an experienced guide

Cultural Events: There are opportunities to participate in Aboriginal cultural ceremonies and learn about Aboriginal culture through interpretation and story telling; you can camp in a tipi, try authentic foods, and attend a powwow

Both Nature Tours and Cultural Events: Both of the above opportunities are offered

No Nature Tours or Cultural Events: Neither of the above opportunities is offered

6. Distance from Home

This is the one-way distance (in km) from your home to the campground on mostly paved roads, with the possibility of having to travel on gravel roads for less than 25 km.

7. Camping Fee

This is the fee per campsite per night (including the cost of firewood).

Now that you are more familiar with the campground characteristics, you can proceed with the exercise. You can always refer back to the **List of 7 Campground Characteristics** while you do this exercise, if you forget the meanings of some of the characteristics.

Once again, the following eight situations describe hypothetical campgrounds. For **each** situation, imagine that your family or household is planning the **next camping trip to Northeastern Alberta with a length of 2 to 3 nights** and that you must choose whether you want to go to **"Campground A" or "Campground B" or not go camping at all**. Only Campgrounds A and B can be considered, as all other campgrounds are unavailable. As a family or household, indicate which option you would choose by checking (✓) the box under it.

For Example:

Campground Characteristics:	Campground A	Campground B	Neither Campground / Stay Home
Level of Services	Well Serviced	Well Serviced	
Fishing	Yes	Yes	
Swimming/Beach	Yes	No	
Privacy/Trees	Open	Private	
Unique Educational Experiences	Both Nature Tours and Cultural Events	Nature Tours	
Distance from home	350 km	250 km	
Camping fee per night	$23	$23	
Which option would you choose? (Check (✓) one box.)	☐	☑	☐

Please complete all of the 8 scenarios that follow.

Consider each scenario one at a time and do not compare one scenario to another.

As a family or household, choose which option - A, B, or Neither - would be preferred for your next camping trip of 2 to 3 nights to Northeastern Alberta.

Scenario 1

Campground Characteristics:	Campground A	Campground B	Neither Campground / Stay Home
Level of Services	Minimally Serviced	Minimally Serviced	
Fishing	Yes	Yes	
Swimming/Beach	No	Yes	
Privacy/Trees	Private	Private	
Unique Educational Experiences	Cultural Events	No Nature Tours or Cultural Events	
Distance from home	250 km	600 km	
Camping fee per night	$23	$7	
Which option would you choose? (Check (✓) one box.)	☐	☑	☐

Scenario 2

Campground Characteristics:	Campground A	Campground B	Neither Campground / Stay Home
Level of Services	Minimally Serviced	Moderately Serviced	
Fishing	No	Yes	
Swimming/Beach	Yes	Yes	
Privacy/Trees	Open	Private	
Unique Educational Experiences	Both Nature Tours and Cultural Events	No Nature Tours or Cultural Events	
Distance from home	350 km	600 km	
Camping fee per night	$23	$32	
Which option would you choose? (Check (✓) one box.)	☐	☑	☐

As a family or household, choose which option - A, B, or Neither - would be preferred for your next camping trip of 2 to 3 nights to Northeastern Alberta.

Scenario 3

Campground Characteristics:	Campground A	Campground B	Neither Campground / Stay Home
Level of Services	Moderately Serviced	Fully Serviced	
Fishing	Yes	No	
Swimming/Beach	No	Yes	
Privacy/Trees	Open	Private	
Unique Educational Experiences	No Nature Tours or Cultural Events	Nature Tours	
Distance from home	150 km	250 km	
Camping fee per night	$17	$23	
Which option would you choose? (Check (✓) one box.)	☐	☑	☐

Scenario 4

Campground Characteristics:	Campground A	Campground B	Neither Campground / Stay Home
Level of Services	Moderately Serviced	Well Serviced	
Fishing	No	No	
Swimming/Beach	Yes	Yes	
Privacy/Trees	Private	Open	
Unique Educational Experiences	Nature Tours	Nature Tours	
Distance from home	600 km	250 km	
Camping fee per night	$7	$32	
Which option would you choose? (Check (✓) one box.)	☐	☑	☐

As a family or household, choose which option - A, B, or Neither - would be preferred for your next camping trip of 2 to 3 nights to Northeastern Alberta.

Scenario 5

Campground Characteristics:	Campground A	Campground B	Neither Campground / Stay Home
Level of Services	Well Serviced	Fully Serviced	
Fishing	No	Yes	
Swimming/Beach	No	Yes	
Privacy/Trees	Private	Open	
Unique Educational Experiences	No Nature Tours or Cultural Events	Both Nature Tours and Cultural Events	
Distance from home	350 km	150 km	
Camping fee per night	$7	$17	
Which option would you choose? (Check (✓) one box.)	☐	☑	☐

Scenario 6

Campground Characteristics:	Campground A	Campground B	Neither Campground / Stay Home
Level of Services	Well Serviced	Minimally Serviced	
Fishing	No	No	
Swimming/Beach	Yes	No	
Privacy/Trees	Open	Private	
Unique Educational Experiences	Cultural Events	Both Nature Tours and Cultural Events	
Distance from home	150 km	150 km	
Camping fee per night	$23	$17	
Which option would you choose? (Check (✓) one box.)	☐	☑	☐

As a family or household, choose which option - A, B, or Neither - would be preferred for your next camping trip of 2 to 3 nights to Northeastern Alberta.

Scenario 7

Campground Characteristics:	Campground A	Campground B	Neither Campground / Stay Home
Level of Services	Fully Serviced	Moderately Serviced	
Fishing	Yes	No	
Swimming/Beach	Yes	Yes	
Privacy/Trees	Private	Open	
Unique Educational Experiences	Both Nature Tours and Cultural Events	Cultural Events	
Distance from home	150 km	350 km	
Camping fee per night	$32	$7	
Which option would you choose? (Check (✓) one box.)	☐	☑	☐

Scenario 8

Campground Characteristics:	Campground A	Campground B	Neither Campground / Stay Home
Level of Services	Fully Serviced	Well Serviced	
Fishing	Yes	Yes	
Swimming/Beach	No	No	
Privacy/Trees	Open	Private	
Unique Educational Experiences	Nature Tours	Cultural Events	
Distance from home	350 km	350 km	
Camping fee per night	$17	$7	
Which option would you choose? (Check (✓) one box.)	☐	☑	☐

Section C - Your Reasons for Camping

One aspect of our study involves understanding some of the reasons why people go camping. Please indicate how you feel by checking (✓) the most and least important reason for going camping, in each of the following sets of statements.

In the following sets of statements, according to you, which are the most and the least important reasons for going camping? Check (✓) only one box per column for each set.

For Example:

Most Important (Check ONE box.)	Reasons for Camping	Least Important (Check ONE box.)
☐	Increasing my knowledge about nature	☑
☐	Spending time with family and friends	☐
☑	Visiting places that have unique attractions	☐

Please complete all of the 7 sets that follow.
Consider each set one at a time and do not compare one set to another.

In the following sets of statements, according to you, which are the most and the least important reasons for going camping? Check (✓) only one box in each column.

Set 1

Most Important (Check ONE box.)	Reasons for Camping	Least Important (Check ONE box.)
☐	Visiting places that have unique attractions	☐
☐	Escaping the hustle and bustle of daily life	☐
☐	Relaxing mentally and physically	☐

Set 2

Most Important (Check ONE box.)	Reasons for Camping	Least Important (Check ONE box.)
☐	Challenging my outdoor skills	☐
☐	Visiting places that have unique attractions	☐
☐	Traveling to a place I've never been	☐

In the following sets of statements, according to you, which are the most and the least important reasons for going camping? Check (✓) only one box in each column.

Set 3

Most Important (Check ONE box.)	Reasons for Camping	Least Important (Check ONE box.)
❒	Increasing my knowledge about nature	❒
❒	Challenging my outdoor skills	❒
❒	Escaping the hustle and bustle of daily life	❒

Set 4

Most Important (Check ONE box.)	Reasons for Camping	Least Important (Check ONE box.)
❒	Spending time with family and friends	❒
❒	Increasing my knowledge about nature	❒
❒	Visiting places that have unique attractions	❒

Set 5

Most Important (Check ONE box.)	Reasons for Camping	Least Important (Check ONE box.)
❒	Relaxing mentally and physically	❒
❒	Spending time with family and friends	❒
❒	Challenging my outdoor skills	❒

Set 6

Most Important (Check ONE box.)	Reasons for Camping	Least Important (Check ONE box.)
❒	Traveling to a place I've never been	❒
❒	Relaxing mentally and physically	❒
❒	Increasing my knowledge about nature	❒

Set 7

Most Important (Check ONE box.)	Reasons for Camping	Least Important (Check ONE box.)
❒	Escaping the hustle and bustle of daily life	❒
❒	Traveling to a place I've never been	❒
❒	Spending time with family and friends	❒

Section D - About You

In the last section, we would like to ask a few questions about you to see how your background may influence your camping choices. Please check (✓) or write down your answers. **Your responses are completely confidential.**

1. Gender: ❒ Male ❒ Female

2. Age: ____ Years

3. Including you, how many people currently live in your household? _____ people

4. How many people in your household are between the following ages:

0-5 years ____ 6-10 years ____ 11-18 years ____
18 years and older _____

5. Do you or any members of your immediate family/household belong to:

a. A hunting or fishing organization ❒ Yes ❒ No
b. A natural history or bird watching club ❒ Yes ❒ No
c. Other environmental or conservation organizations ❒ Yes ❒ No

6. Please indicate what kind of camping and related equipment you own. (Check all that apply.)

❒ canoe or kayak	❒ camper trailer	❒ skis or snowshoes
❒ motorized boat	❒ sailboat	❒ recreational vehicle (RV)
❒ seadoo	❒ binoculars	❒ all-terrain vehicle (ATV)
❒ fishing gear	❒ tent	❒ bicycles

7. Which is the highest level of education you have completed? (Check only one.)

❒ Never attended school
❒ Grade school (grades 1 to 6)
❒ Junior high school
❒ High school graduate
❒ Technical school/College
❒ Some university
❒ Undergraduate university degree
❒ Some graduate study
❒ Post graduate university degree

8. Which category best describes your total household income (before taxes) in 2003? (Check (✓) only one.)

❒ < $10,000	❒ $40-$49,999	❒ $80-$89,999	❒ $120-129,999
❒ $10-$19,999	❒ $50-$59,999	❒ $90-$99,999	❒ $130-$139,999
❒ $20-$29,999	❒ $60 -$69,999	❒ $100-$109,999	❒ $140-$149,999
❒ $30-$39,999	❒ $70-$79,999	❒ $110-$119,999	❒ > $150,000

9. If you have any comments about this survey or about camping in Northeastern Alberta, please write in the space below and on the back of this page. **Your comments are completely confidential.**

Thank you for taking the time to complete this survey!
We appreciate your participation.

Please return your survey in the postage-paid envelope provided.

Appendix B: Specification Test for Random Components of Utility

McFadden and Train's Lagrange Multiplier test was used to check for the presence of random components in the indirect utility function. Considering that respondents make choices from a set $C = \{1,...,J\}$ and x_i represents the attributes of alternative i, a vector of artificial variables was generated for selected components (variables) n of x_i, as follows (based on McFadden and Train 2000 and Hensher and Greene 2001):

$$z_{in} = \tfrac{1}{2}(x_{in} - x_{Cn})^2 \ \ with\ x_{Cn} = \sum_j x_{jn} P_{jn}$$

where P_{jn} is the conditional logit choice probability. The Lagrange Multiplier test is based on the null hypothesis that the correct model specification is MNL, in other words, that the artificial variables z_{in} should be omitted from the MNL model. To apply this test, the conditional logit model is estimated with artificial variables, included simultaneously, for selected components of utility and the null hypothesis rejected if the coefficients on the artificial variables are significantly different from zero. McFadden and Train (2000) suggest using asymptotic t-statistics greater than 1 rather than 2 as a guide for rejection of the null hypothesis since t-statistics for the artificial variables may not be a reliable guide to the presence of significant mixing due to a combination of dependence and correlation issues. Artificial variables that pass the test are specified as the random components in a RPL model.

Table B-1 reports the estimation results for the artificial variables, which suggest (based on t-statistics greater than 1) that there may be taste variation in the following attributes: *none/stay at home*, *minimally serviced*, *well serviced*, and *nature and cultural programs*.

Table B-1 Estimation Results for the Artificial Variables from the Specification Test for Random Components of Utility

Artificial Variable	Coefficient	Standard Error	T-statistic
avNone/Stay at home	0.5904	0.43	1.36
avMinimally serviced	0.9244	0.44	2.08
avModerately serviced	-0.1086	0.48	-0.23
avWell serviced	-0.8791	0.48	-1.83
avFishing	0.1182	0.54	0.22
avSwimming/Beach	0.0922	0.39	0.24
avPrivacy/Trees	-0.0859	0.38	-0.23
avNature tours	0.3212	0.44	0.73
avCultural events	0.2826	0.50	0.57
avNature and cultural programs	0.9164	0.51	1.80
avDistance from home	-0.0174	0.02	-0.87

Appendix C: Household and Individual Statistics

Table C-1 Origin of Respondents

Origin	Total	Origin	Total	Origin	Total
Edmonton	97	Lamont	2	Fort Assiniboine	1
Fort McMurray	31	Camrose	2	Cold Lake	1
Fort Saskatchewan	16	Bonnyville	2	Drayton Valley	1
Sherwood Park	15	Bruderheim	2	Red Deer	1
St. Albert	8	Morinville	2	Therien	1
Vegreville	7	Tofield	2	Leduc	1
Lac La Biche	4	Pickardville	2	Bawlf	1
Legal	4	Villeneuve	2	Lloydminster	1
Westlock	4	Province of Regina	2	Vimy	1
Stony Plain	4	Beaumont	1	Cardiff	1
Calgary	3	Airdrie	1	Lethbridge	1
Gibbons	3	Rosalind	1	Devon	1
Bon Accord	3	Elk Point	1	Ardrossan	1
Rochester	3	Millet	1	Lacombe	1
Redwater	3	Black Diamond	1	Innisfree	1
Radway	3	Vermillion	1	Hinton	1
Boyle	2	Thorhild	1	Unknown	1
Barrhead	2	Peace River	1		
Athabasca	2	Anzac	1	Total	259

Table C-2 Household and Individual Statistics

Attribute	Mean	Median	Stdev	Min	Max	*n*
Household size	3.42	4	1.25	1	6	259
Total children	1.26	1	1.15	0	4	259
Children under 6	0.30	0	0.65	0	3	259
Children under 11	0.44	0	0.73	0	3	259
Children under 18	0.53	0	0.80	0	3	259
Total Adults	2.17	2	0.61	1	5	259
Household Income	$80,300	$75,000	$33,700	$5,000	$155,000	219
Age	44.20	42	11.40	16	78	255
Education[15]	5.06	5	1.26	2	9	256

[15] See Appendix A (page 101), for a description of education levels. The levels range from completion of high school to a post-graduate degree, with Level 5 corresponding to technical school/college.

Appendix D: Camping Statistics

Table D-1 Number of Visits by Respondents to Northeastern Alberta Provincial Campgrounds in 2003/2004

Origin	Total	Origin	Total	Origin	Total
Long Lake	150	Miseieutin	14	Kehiwin	3
Beaver Lake	63	Lakeland	8	Wolf Lake	3
Cross Lake	56	Engstrom Lake	7	English Bay	2
North Buck Lake	56	Franchere Bay	7	Engstrom	2
Winston Churchill	38	Hangingstone	7	Greentree	2
Gregoire Lake	35	Ironwood Lake	7	Lawrence Lake	2
Cold Lake	26	Crane Lake East	6	Crow Lake	1
Pinehurst Lake	21	Crane Lake West	6	Minnie Lake	1
Calling Lake	19	Moose Lake	6	Poacher's Landing	1
Fork Lake	16	Whitney Lakes	6	Cascade Rapids	0
Hanmore Lake	16	Seibert Lake	5	French Bay	0
Fawcett Lake	15	Maqua Lake	5	Tanasiuk	0
Garner Lake	15	Chain Lakes	4	Non-Provincial	
Touchwood Lake	14	Christina River	4	Campgrounds	83

Table D-2 Number of Camping Trips Taken by Respondents in 2003/2004

	Mean	Median	Stdev	Min	Max	*n*
Trips	4.93	4	3.29	1	10	259

Table D-3 Household Participation in Various Camping Activities

Activity	Total	Activity	Total
Swimming/beach activity	193	Bird watching (with binoculars)	36
Hiking	167	Using summer off-highway vehicles	34
Fishing	164	Canoeing/kayaking/rafting/sailing	24
Wildlife viewing	124	Horseback riding	14
Power boating	123	Hunting	13
Sightseeing in natural areas	92	Using winter off-highway vehicles	11
Water skiing	72	Attending educational/interpretive	
Photographing nature	59	programs	11
Mountain biking	51	Cross-country/downhill skiing	3

Table D-4 Household Ranking of Criteria for Choosing a Camping Destination

Criteria for Choosing a Camping Destination	Number of Households that Ranked Criteria as Top Two	
	Most Important	Least Important
Level of services offered at campground (*n=209*)	117	35
Distance to the campground (*n=216*)	92	53
Types of leisure opportunities available (*n=212*)	87	58
Type and quality of scenery (*n=211*)	76	65
Cost of camping per night (*n=212*)	35	104
Quality of roads leading to campground (*n=214*)	20	112

Table D-5 Types of Camping and Related Equipment Owned by Respondents

Equipment	Total	Equipment	Total
Fishing gear	213	Recreational vehicle (RV)	101
Binoculars	194	Skis or snowshoes	68
Tent	173	All-terrain vehicle (ATV)	66
Camper trailer	155	Canoe or kayak	16
Motorized boat	119	Personal watercraft (i.e. seadoo)	7
Bicycles	102	Sailboat	2

Appendix E: Tables Relating to Forecasting Model

Table E-1 Origin Cities and Areas Used to Construct Forecasting Model

Origin	Description	Cities Included
1	Edmonton area	Edmonton*, Sherwood Park, St. Albert, Fort Saskatchewan, Beaumont, Stony Plain, Devon, Ardrossan, Villeneuve, Leduc, Millet
2	Calgary/Red Deer area	Calgary*, Black Diamond, Airdire, Red Deer*, Lacombe
3	N of Edmonton I	Thorhild*, Legal, Bon Accord, Gibbons, Vimy, Morinville, Cardiff, Redwater, Bruderheim, Lamont, Radway
4	NW of Edmonton	Westlock*, Barrhead, Pickardville, Fort Assiniboine
5	Fort McMurray area	Fort McMurray*, Anzac
6	Lac La Biche	Lac La Biche
7	Cold Lake/Bonnyville	Cold Lake, Bonnyville*, Elk Point, Therien
8	N of Edmonton II	Rochester, Boyle, Athabasca*
9	SE of Edmonton	Camrose*, Bawlf, Rosalind, Lloydminster*, Vermillion, Innisfree
10	Vegreville area	Vegreville*, Tofield

Note: * indicates the city used as the midpoint for calculating distances. Where stars appear beside two cities in one category, the approximate midpoint between the cities was used to calculate distances.

Table E-2 Campgrounds/Campground Clusters Used to Construct Forecasting Model

CG Group	Campgrounds Represented	Closest City	Attributes						
			Services	Fishing	Beach	Privacy/ Trees	Educational Programs	Price	Calibration Constant
1	Gregoire Lake[P]	Fort McMurray	Full	Yes	Yes	Yes	Nature	$23	0.7
2	Long Lake[P]	Boyle	Full	Yes	Yes	No	No	$24	1.6
3	North Buck Lake[P]	Caslan	Well	Yes	Yes	No	No	$24	0.4
4	Jackfish and Hope Lakes and Forfar Park[NP]	Athabasca	Mod	Yes	Yes	No	No	$21	0.0
5	Touchwood, Pinehurst, and Fork Lakes[P]	Lac La Biche	Mod	Yes	Yes	Yes	No	$16	0.7
6	Beaver Lake[P]	Lac La Biche	Well	Yes	Yes	No	No	$19	0.2
7	Sir Winston Churchill[P]	Lac La Biche	Full	Yes	Yes	Yes	Nature	$22	-0.4
8	Elinor Lake, Plamondon, Kikino Resort[NP]	Lac La Biche	Full	Yes	Yes	Yes	No	24	-0.7
9	Franchere Bay and Moose Lake[P]	Glendon	Well	Yes	Yes	Yes	No	$22	0.2
10	Cold Lake and Crane Lake West[P]	Cold Lake	Well	Yes	Yes	Yes	Nature	$22	
11	English and French Bays, Crane Lake East[P]	Cold Lake	Mod	Yes	Yes	Yes	No	$19	0.0 (base)
12	Wolf Lake[P]	Iron River	Mod	Yes	Yes	Yes	No	$16	-0.7
13	Cold Lake and Muriel Lake[NP]	Ardmore	Full	Yes	Yes	Yes	Nature	$15	-0.8
14	Christina Lake and Steep Bank[NP]	Conklin	Full	Yes	Yes	Yes	No	$15	-0.7
15	Whitney Lakes[P]	Lindbergh	Full	Yes	Yes	Yes	Nature	$19	-0.7
16	Calling Lake[P]	Calling Lake	Well	Yes	Yes	No	No	$19	-1.1
17	Fawcett Lake[P]	Smith	Mod	Yes	Yes	Yes	No	$19	-2.2
18	Cross Lake[P]	Fawcett	Well	Yes	Yes	Yes	No	$15	-0.6
19	Hanmore Lake[P]	Smoky Lake	Mod	Yes	Yes	No	No	$17	-1.1
20	Bonnie and Floating Stone Lakes[NP], Garner Lake[P]	Spedden	Well	Yes	Yes	Yes	No	$17	-0.9
21	Proposed CG[NP]	Lac La Biche	Full	Yes	Yes	Yes	Nature, Culture	$23	N/A

Notes: CG = campground; P = Provincial campground; NP = Non-provincial campground; 'Closest City' refers to the city that was used to calculate the distances in Table E-3; for campgrounds that do not include firewood in their overnight fee, a $5 premium was added to the price to reflect this additional cost to campers

Table E-3 Table of Distances from Cities/Towns to Campgrounds (km)

CG Group	City/Area of Origin									
	Edmonton	Calgary/ Red Deer	Thorhild	Westlock	Fort McMurray	Lac La Biche	Bonnyville	Athabasca	Camrose/ Lloydminster	Vegreville
1	425	650	380	390	30	260	390	295	515	455
2	155	380	115	125	285	70	200	60	270	190
3	180	410	135	150	300	50	180	80	295	215
4	200	425	170	140	335	120	250	80	325	245
5	255	485	215	225	310	50	180	130	325	290
6	215	445	175	185	270	10	140	90	285	250
7	216	447	176	187	271	12	141	110	286	252
8	256	485	216	225	311	50	181	130	326	290
9	240	465	200	225	370	110	45	190	228	180
10	310	540	260	285	405	145	50	220	235	205
11	311	540	261	285	406	145	60	220	236	205
12	285	485	240	265	360	100	30	180	230	180
13	275	475	230	255	400	140	20	220	220	170
14	310	545	270	280	145	150	280	185	405	345
15	245	375	210	260	425	165	40	240	175	140
16	215	440	180	150	350	130	260	55	340	255
17	210	420	180	115	380	165	295	90	365	285
18	145	350	110	50	395	175	285	100	295	220
19	135	365	93	120	360	95	115	155	225	170
20	180	410	140	170	345	90	70	165	225	200
21	265	495	225	235	335/225*	60	190	140	335	300

Note: CG = campground; *335 km and 225 km are, respectively, the modeled distances from Fort McMurray to the proposed resort before and after the paving of Highway 881.

Table E-4 Visitation to Northeastern Alberta Campgrounds from 1993 to 2002

Campground	Year									
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Provincial										
Beaver L.	2651	2182	2689	3188	2536	2530	2625	2625	3732	ND
Calling L.	905	832	1035	706	ND	ND	ND	194	ND	ND
Cold L.	1863	2574	2357	2432	2014	2293	2946	3225	2602	3207
Crane L. East	1085	984	1133	1160	1120	1245	1128	1128	ND	ND
Crane L. West	959	1161	1217	1250	1340	1290	1252	1252	ND	ND
Cross L.	3528	3618	2800	2975	4318	3829	1949	5512	3605	3843
English Bay	1524	1627	1615	1616	1378	1035	1454	1454	ND	ND
Engstrom L.	ND	ND	ND	267	351	106	33	169	ND	287
Fork L.	1438	1141	1419	1327	1303	1574	1353	1353	942	ND
Franchere Bay	4788	4695	3998	4422	4249	4594	4392	4392	ND	ND
French Bay	448	416	500	436	643	ND	604	533	174	438
Garner L.	2690	3091	3070	3259	2984	2625	1862	1973	ND	890
Gregoire L.	5436	5156	5798	5417	6380	6316	6566	9212	7798	9423
Hangingstone	532	1150	1235	1043	898	257	123	882	ND	1449
Hanmore L.	654	1035	1246	811	926	888	1333	529	199	ND
Kehiwin	2033	2116	1769	1857	1387	1534	1733	1733	ND	241
Touchwood L.	2669	3532	3733	4200	3730	2946	2452	857	1924	2071
Pinehurst L.	3769	3831	3666	3526	3219	2893	3427	1948	2760	3359
Ironwood L.	713	548	452	518	352	309	436	162	181	171
Seibert L.	927	658	712	593	725	235	1003	114	877	137
Long L.	11544	12267	12874	12437	12423	11860	14157	14648	13018	14634
Maqua L.	ND	ND	ND	221	198	86	182	196	ND	278
Minnie L.	162	264	88	147	173	222	106	147	ND	117
Moose L.	732	753	1084	1047	1241	1680	1161	1161	ND	ND
North Buck L.	3709	3881	3753	3551	3686	3707	4225	3007	3007	3634
Winston Ch.	3736	4024	3865	3296	3497	2799	3496	3496	ND	ND
Vermillion	2517	2102	2171	2400	2467	3689	3650	2631	2322	2449
Whitney Ls.	1860	2070	1988	2212	2569	3643	2557	1676	2581	3205
Wolf L.	ND	ND	ND	2217	1930	1458	1868	1868	ND	ND
Non-provincial										
Elinor L.	ND	ND	ND	ND	ND	ND	ND	ND	ND	1725
Plamondon	ND	ND	ND	ND	ND	ND	ND	ND	ND	506
Steep Bank	ND	ND	ND	ND	ND	ND	ND	ND	ND	1420

Source: Alberta Community Development, Parks and Protected Areas Division
Note: ND = no data